# ENVIRONMENTAL MAPS

FOOTHILLS PIPE LINES LTD.



# ENVIRONMENTAL AND VEGETATION MAPS

**FOR** 

FOOTHILLS PIPE LINES LTD.

CANADIAN ARCTIC GAS STUDY LTD.

MAY 26 1975

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### VEGETATION MAPS

### BACKGROUND

The vegetation of most of the study area has been mapped by The Forest Management Institute, Canadian Forestry Service. Maps produced at a scale of 1:125,000 differentiate between 16 basic vegetation types of complexes. Also included is information on height, species composition and canopy density of forested areas. The Forest Management Institute has also prepared a map series at a scale of 1:500,000 in which vegetation types have been grouped according to similiar vegetation and site types. It is this grouping scheme which was adopted in the production of the following series of vegetation maps at a scale of 1:250,000.

The nine categories which appear on the vegetation maps, and their components are as follows:

### Vegetation-Type Aggregates\*

Map Category		Components
Riparian Communities	А	Riparian pioneer
	В	Riparian spruce - hardwoods
	С	Riparian spruce - feather moss
Upland Forest	D	Upland spruce (pine) - hardwoods
	E	Upland spruce - feather moss
Black Spruce Forest	F	Black spruce - sphagnum
	G	Black spruce - lichen
Upland Dwarf Shrub	Н	Upland dwarf shrub
Sedge Fens	1	Sedge fens
Bog and Pond Areas	J	Sphagnum bogs
	K	Pond fields
Upland Pioneer	L	Pioneer steep-slope mixtures
	M	Upland fan patterns
	N	Upland high shrub
Recent Burn		Burn - unclassified
Non-Vegetated		Rock
		Open or improved land

\*Adapted from: Forest Management Insitute. 1974. Vegetation types of the Mackenzie Corridor (Appendix 7). Environmental-Social Program, Northern Pipelines. Following are brief descriptions of the components of the nine mapped categories. These descriptions have been extracted from "Vegetation Types of the Mackenzie Corridor", prepared by the Forest Management Institute. More complete descriptions of the vegetation types in the Mackenzie Valley can be found in Part 5, Section D - 3.6.

### Riparian Communities

 Willow and alder on recent alluvium and white spruce, balsam poplar, trembling aspen, and black spruce on older alluvial sites.
 Permafrost present on older alluvial sites in northern sections.

### Upland Forest

 Areas from which the insulating organic layer has been removed by severe fire(s). Little or no vegetation on recently burned areas, but old burns supporting fair to excellent stands of white spruce, black spruce, trembling aspen, white birch, and jackpine in southern areas. Usually a deep active layer.

### Black Spruce Forest

- Slow growing forest of black spruce/larch stands, usually low density with heights to 50 feet. Thick moss/lichen mat over fairly deep organic layer. Shallow active layer (approximately 12 inches). Terrain may be flat or rolling.

### Upland Dwarf Shrub

- Dwarf birch/sedge meadows, usually fairly wet and may be flooded during spring. Deep organic soil with variable active layer.

### Sedge Fens

 Low shrub/moss types found on exposed slopes and ridge tops. Very shallow active laver.

### Bog and Pond Areas

 Sphagnum bogs and open ponds associated with vegetation types including dwarf birch meadows and black spruce forests. Physical aspects of these areas usually related to thermokarst features.

### Upland Pioneer

 Steep river banks, eroded slopes, and gullies with variable vegetation cover. Tree cover may include white and black spruce, aspen, and white birch. Various shrubs, grasses, sedges in ground layer.

### Recent Burn

Little or no vegetation in very recently burned areas.

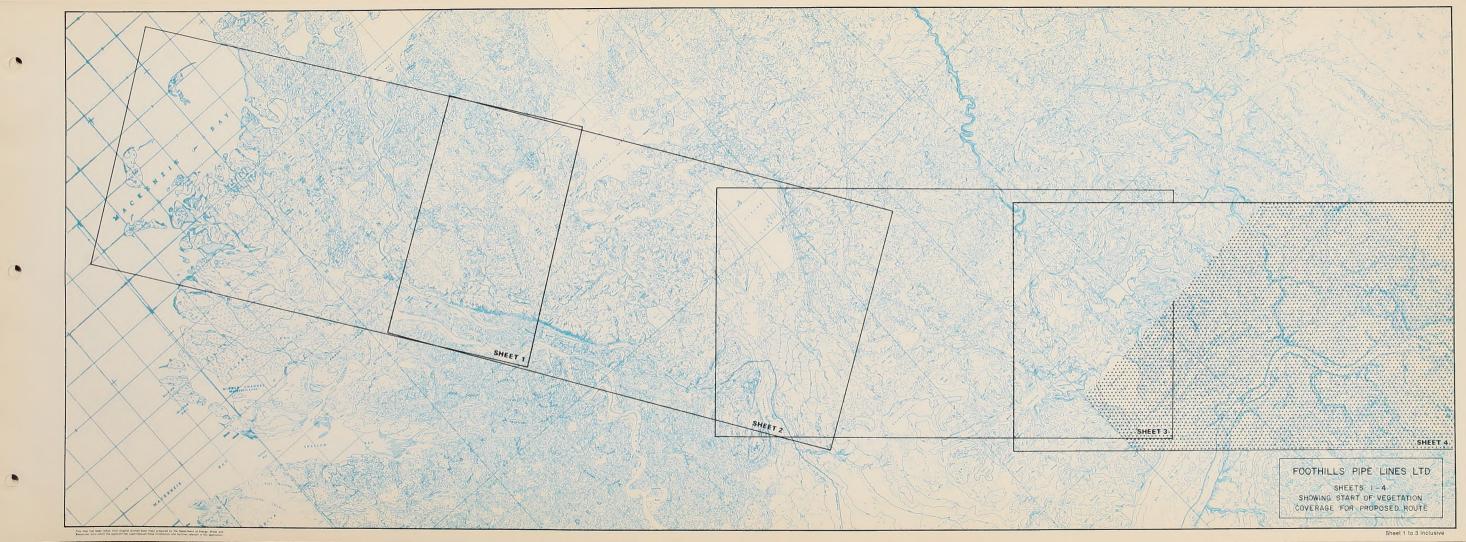
Successional species on older burns. White spruce is most common tree species, with black spruce and white birch present in some areas. Jackpine may occur in southern areas.

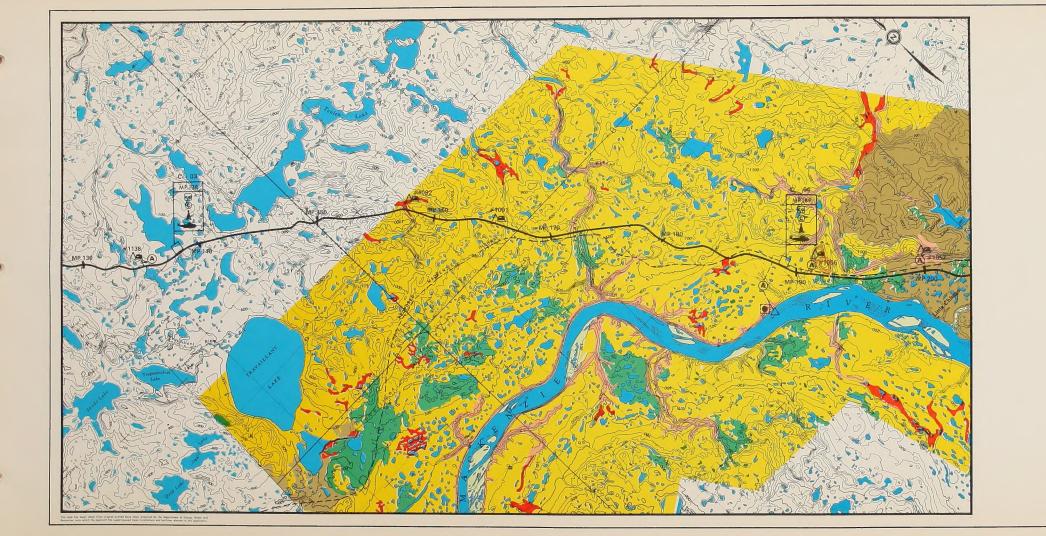
### Non-Vegetated

- Areas include rock outcrops, mountain tops and open and improved lands. Generally devoid of vegetation.

### INFORMATION SOURCES

Forest Management Institute. 1974. Vegetation types of the Mackenzie Corridor. Environmental-Social Program, Northern Pipelines. Report No. 73-46 (Text, appendices, maps).





### ENVIRONMENTAL LEGEND



### PIPELINE LEGEND

TOPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	©
OMPRESSOR STATION	C	PROPOSED HELIPAD	-
MPRESSOR STATION WITH CHILLING	[CC]	PERMANENT ACCESS ROAD	—(A)—
ETER STATION	M	TEMPORARY ACCESS ROAD	A
ATERIAL STOCKPILE SITE		PROPOSED HIGHWAY	
ROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	
ROPOSED TEMPORARY WHARF	Δ	BORROW AREA	<u>/</u> □=
T REPEATER STATION	A		

## ENVIRONMENTAL MAP

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### ENVIRONMENTAL LEGEND



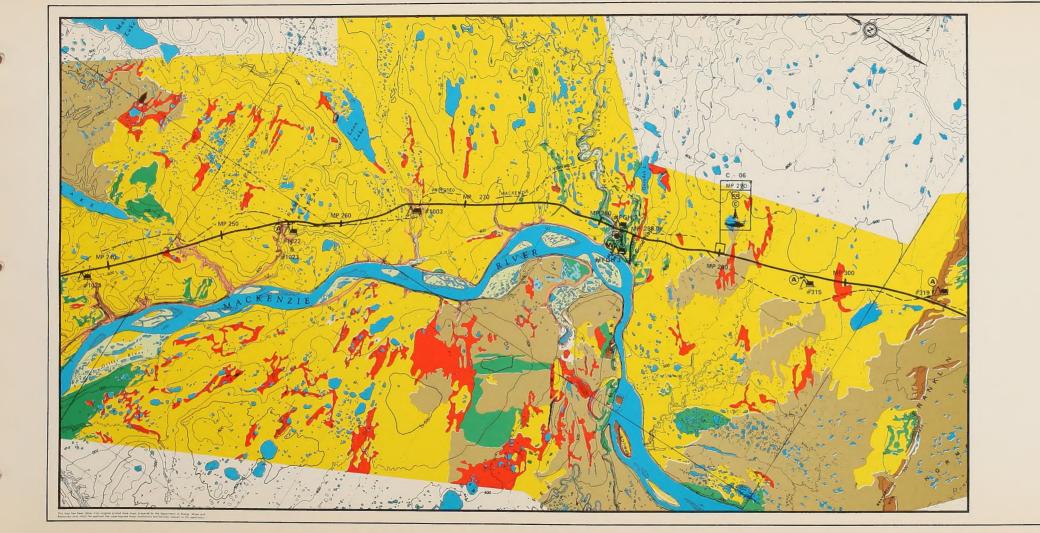
### PIPELINE LEGEND

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COMPRESSOR STATION	C	PROPOSED HELIPAD	-
COMPRESSOR STATION WITH CHILLING	<b>6</b>	PERMANENT ACCESS ROAD	—(A)—
METER STATION	M	TEMPORARY ACCESS ROAD	A
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### ENVIRONMENTAL LEGEND



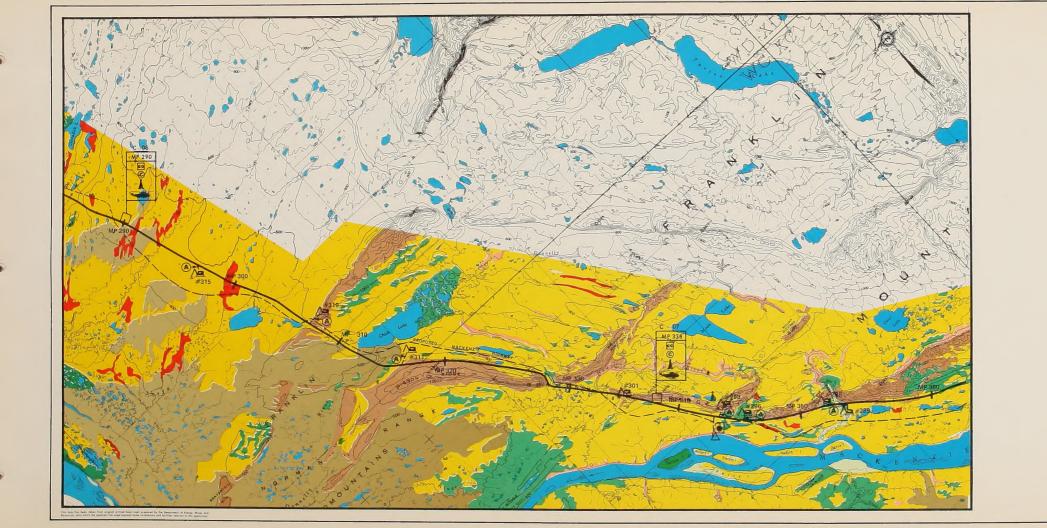
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### ENVIRONMENTAL MAP

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### ENVIRONMENTAL LEGEND



### PIPELINE LEGEND

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COMPRESSOR STATION	C	PROPOSED HELIPAD	-
COMPRESSOR STATION WITH CHILLING	60	PERMANENT ACCESS ROAD	-A-
METER STATION	M	TEMPORARY ACCESS ROAD	A
MATERIAL STOCKPILE SITE	•	PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	_
PROPOSED TEMPORARY WHARF	Δ	BORROW AREA	
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ENVIRONMENTAL LEGEND



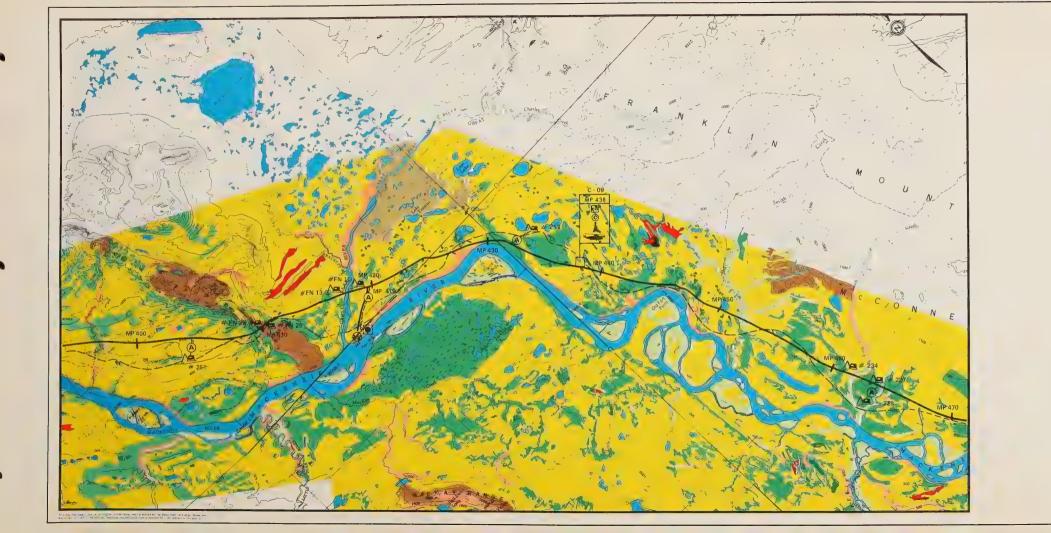
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### ENVIRONMENTAL LEGEND



### PIPELINE LEGEND

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COMPRESSOR STATION

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TO PROPOSED TEMPORARY WHARF

EXISTING HIGHWAY

TO PROPOSED TEMPORARY WHARF

CONTREPERTED HIGHWAY

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## VEGETATION

### ENVIRONMENTAL LEGEND



### PIPELINE LEGEND

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### ENVIRONMENTAL LEGEND



### PIPELINE LEGEND

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METER STATION	M	TEMPORARY ACCESS ROAD	(A)-
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PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	
PROPOSED TEMPORARY WHARF	Ă	BORROW AREA	
CNT REPEATER STATION	Å		

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### ENVIRONMENTAL LEGEND



### PIPELINE LEGEND

PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	©
COMPRESSOR STATION	(C)	PROPOSED HELIPAD	
COMPRESSOR STATION WITH CHILLING	<b>E</b>	PERMANENT ACCESS ROAD	
METER STATION	M	TEMPORARY ACCESS ROAD	~~~A
MATERIAL STOCKPILE SITE		PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	
PROPOSED TEMPORARY WHARF	Δ	BORROW AREA	<i>∆</i> <b>=</b>
NT REPEATER STATION	Ā		-

### ENVIRONMENTAL MAP

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### ENVIRONMENTAL LEGEND



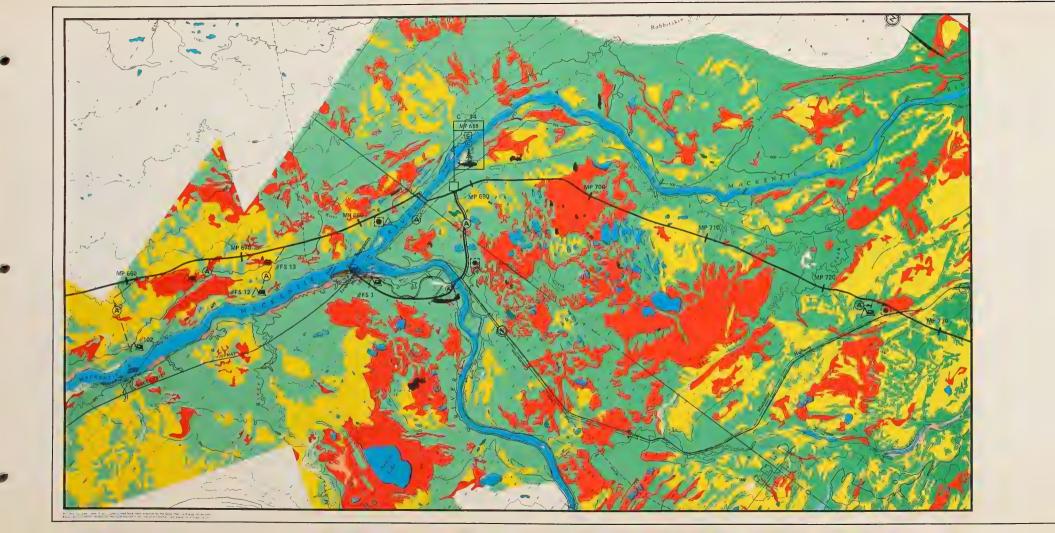
### PIPELINE LEGEND

PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	(c)		
COMPRESSOR STATION	C	PROPOSED HELIPAD	-		
COMPRESSOR STATION WITH CHILLING	<b>©</b>	PERMANENT ACCESS ROAD	(A)		
METER STATION	M	TEMPORARY ACCESS ROAD	A		
MATERIAL STOCKPILE SITE	(8)	PROPOSED HIGHWAY			
PROPOSED PERMANENT WHARF	(M)	EXISTING HIGHWAY			
PROPOSED TEMPORARY WHARF	Δ	BORROW AREA	<u> </u>		
CNT REPEATER STATION	Å		Ť		

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### ENVIRONMENTAL LEGEND



### PIPELINE LEGEND

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COMPRESSOR STATION WITH CHILLING	<b>E</b>	PERMANENT ACCESS ROAD	— <u>A</u> —
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MATERIAL STOCKPILE SITE	(e)	PROPOSED HIGHWAY	
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### ENVIRONMENTAL LEGEND



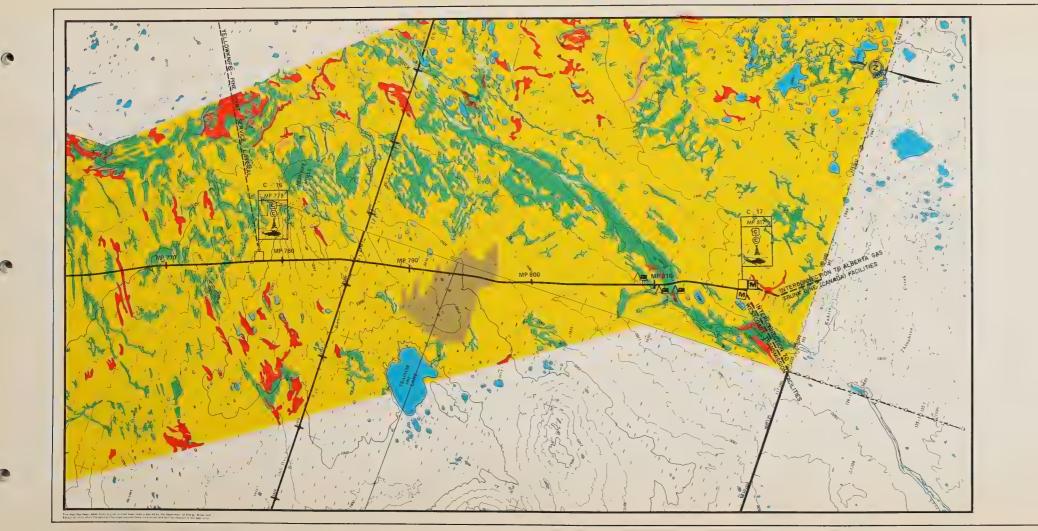
### PIPELINE LEGEND

PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	©
COMPRESSOR STATION	C	PROPOSED HELIPAD	-
COMPRESSOR STATION WITH CHILLING	DC	PERMANENT ACCESS ROAD	-(A)-
METER STATION	(M)	TEMPORARY ACCESS ROAD	(A)
MATERIAL STOCKPILE SITE	(e)	PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	
PROPOSED TEMPORARY WHARF	Δ	BORROW AREA	/ <u></u>
CNT REPEATER STATION	Å		Ç

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### ENVIRONMENTAL LEGEND



### PIPELINE LEGEND

CONSTRUCTION CAMP (TEMPORARY) PROPOSED PIPELINE ROUTE PROPOSED HELIPAD COMPRESSOR STATION PERMANENT ACCESS ROAD COMPRESSOR STATION WITH CHILLING METER STATION TEMPORARY ACCESS ROAD MATERIAL STOCKPILE SITE PROPOSED HIGHWAY -----PROPOSED PERMANENT WHARF EXISTING HIGHWAY <u></u>∧= PROPOSED TEMPORARY WHARF BORROW AREA CNT REPEATER STATION

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### BACKGROUND

The ungulate species considered in the following series of maps include:

Reindeer (R) — <u>Rangifer tarandus tarandus</u>

Caribou (C) — <u>Rangifer tarandus groenlandicus</u>

<u>Rangifer tarandus granti</u>

<u>Rangifer tarandus caribou</u>

Moose (M) – <u>Alces alces</u>
Dall Sheep (S) – <u>Ovis dalli dalli</u>

The information presented includes an indication of species presence and an evaluation of the mapped area in relation to the areal coverage and quality of habitats with respect to the subject species. The boundary of the reindeer reserve near Inuvik is also indicated.

The class rating system for habitat units was adapted from the habitat evaluation system used by the Canadian Wildlife Service. The criteria used in evaluating habitats were as follows:

- The number and distribution of the subject species within the area over the seasons of the year, with particular emphasis on the winter season.
- 2 The consistency of utilization of the area by the subject species.
- 3 The degree to which the area provides the species' habitat requisites, including and forage.
- 4 Specific use sites such as calving areas and migration routes fall within the Class 1 rating.

A three class system was used in the rating of habitat units as they appear on the following maps. The characteristics of each of these classes is as follows:

### Class 1

These units generally comprise the best available habitats for the subject species within the Mackenzie Valley and adjacent areas. Size is the only known limitation on the value of these units. Specific use sites such as migration routes are rated as Class 1.

### Class 2

Habitat units in this class are characterized by moderate limitations in quality. An example of such limitations would be poor interspersion of forage and cover requirements, even though both are found within the unit.

### Class 3

Habitat units with this rating are only marginal in value and used only occasionally by the subject species

### INFORMATION SOURCES

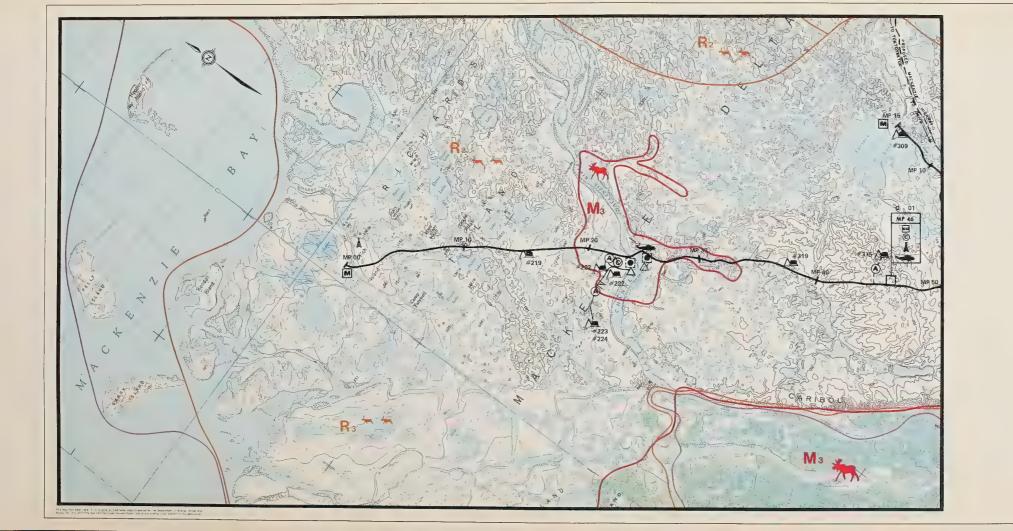
The wildlife habitat inventories prepared by the Canadian Wildlife Service served as a primary information source. This information was updated and supplemented by data from other sources wherever possible. Bibliographic references of information sources are listed below.

- Hill, R.M. 1967. Mackenzie reindeer operations. Northern Coordination and Research Center, Department of Indian Affairs and Northern Development.
- Nolan, J.W., B.C. Goski, and G.W. Wilde. 1973. Atlas of Dall sheep and grizzly bear habitat maps. Wildlife habitat inventory of the Mackenzie Valley and the Northern Yukon; Canadian Wildlife Service, Ottawa.
- Prescott, W.H., G.L. Erickson, L.E. Walton and D.G. Smith. 1973. Atlas of caribou range maps. Wildlife habitat inventory of the Mackenzie Valley and the Northern Yukon. Canadian Wildlife Service, Ottawa.

1973. Atlas of moose habitat maps. Wildlife habitat inventory of the Mackenzie Valley and Northern Yukon. Canadian Wildlife Service. Ottawa.

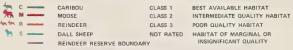
Slaney, F.F. and Company Ltd. 1974. Environmental program, Mackenzie Delta, N.W.T., Canada; Winter study supplement. Prepared for Imperial Oil Ltd., Gulf Oil Ltd., Shell Canada Ltd., Canadian Arctic Gas Study

Stevens, W.E. 1975. Personal communication



### ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS



### DESCRIPTOR

Example M2 (ndicates habitet unit comprains informediate moose habitat.

### PIPELINE LEGEND

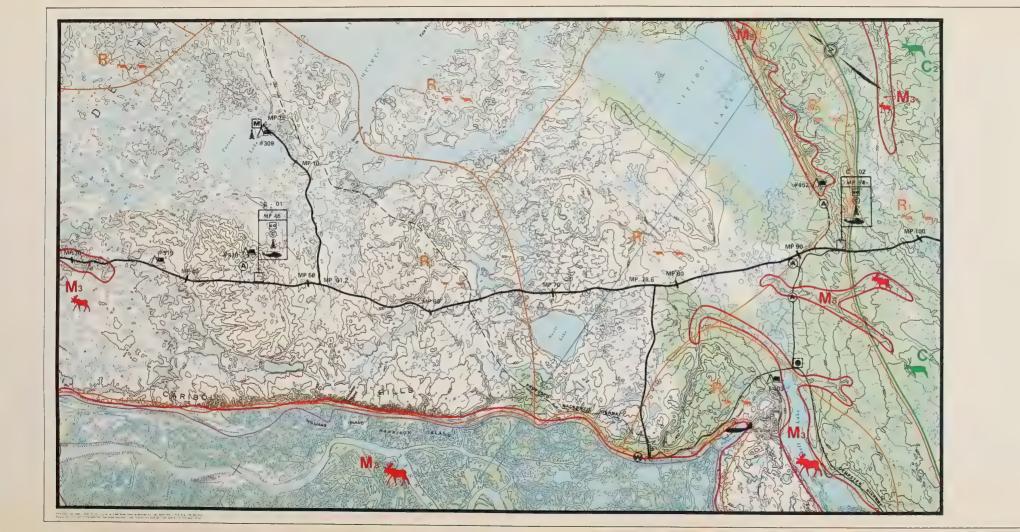
PROPOSED PIPELINE ROUTE	-	CONSTRUCTION CAMP (TEMPORARY)	©
COMPRESSOR STATION	C	PROPOSED HELIPAD	-
COMPRESSOR STATION WITH CHILLING	<u> </u>	PERMANENT ACCESS ROAD	(A)
METER STATION	M	TEMPORARY ACCESS ROAD	A
MATERIAL STOCKPILE SITE		PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	
PROPOSED TEMPORARY WHARF	Δ	BORROW AREA	/ <u></u>
CNT REPEATER STATION	å		

NOTE THE LOCATION OF TEMPORARY CONSTRUCTION FACILITIES AND PERMANENT INSTALLATIONS IS NOT FINAL AND IS SUBJECT TO CHANGE UPON COMPLETION OF DEFAILED SITE INVESTIGATION AND LOGISTICS STUDIES

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### ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS

C — CARIBOU CLASS 1 BEST AVAILABLE HABITAT
MOOSE CLASS 2 INTERMEDIATE QUALITY HABITAT
REINDEER CLASS 3 POOR QUALITY HABITAT
DALL SHEEP NOT RATED HABITAT OF MARGINAL OR
REINDEER RESERVE BOUNDARY
INSIGNIFICANT QUALITY

### DESCRIPTOR

Example Mg indicates habitat unit comprising intermediate modes habitat

### PIPELINE LEGEND

PROPOSED PIPELINE ROUTE CONSTRUCTION CAMP (TEMPORARY) COMPRESSOR STATION PROPOSED HELIPAD COMPRESSOR STATION WITH CHILLING PERMANENT ACCESS ROAD METER STATION TEMPORARY ACCESS HOAD MATERIAL STOCKPILE SITE PROPOSED HIGHWAY -----PROPOSED PERMANENT WHARF EXISTING HIGHWAY PROPOSED TEMPORARY WHARF BORROW AREA CNT REPEATER STATION

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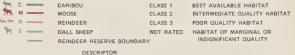
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### ENVIRONMENT LEGEND

### HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS



Example M2 indicates habitet unit comprising intermediate moose habitat

### PIPELINE LEGEND

PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	(C)
COMPRESSOR STATION	C	PROPOSED HELIPAD	-
COMPRESSOR STATION WITH CHILLING	<b>©</b>	PERMANENT ACCESS ROAD	
METER STATION	M	TEMPORARY ACCESS ROAD	A
MATERIAL STOCKPILE SITE		PROPOSED HIGHWAY	
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### ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES

HABITAT CLASS RATINGS



CLASS 1 BEST AVAILABLE HABITAT CLASS 2 INTERMEDIATE QUALITY HABITAT

CLASS 3 POOR QUALITY HABITAT NOT RATED HABITAT OF MARGINAL OR

REINDEER RESERVE BOUNDARY

INSIGNIFICANT QUALITY

DESCRIPTOR

Example M2 Indicates habites unit comprising Intermediate moose habitas

### PIPELINE LEGEND

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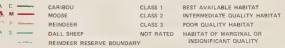
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### ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS



### DESCRIPTOR

Example: M2 Indicates habitat unit comprising intermediate moote habitat.

### PIPELINE LEGEND

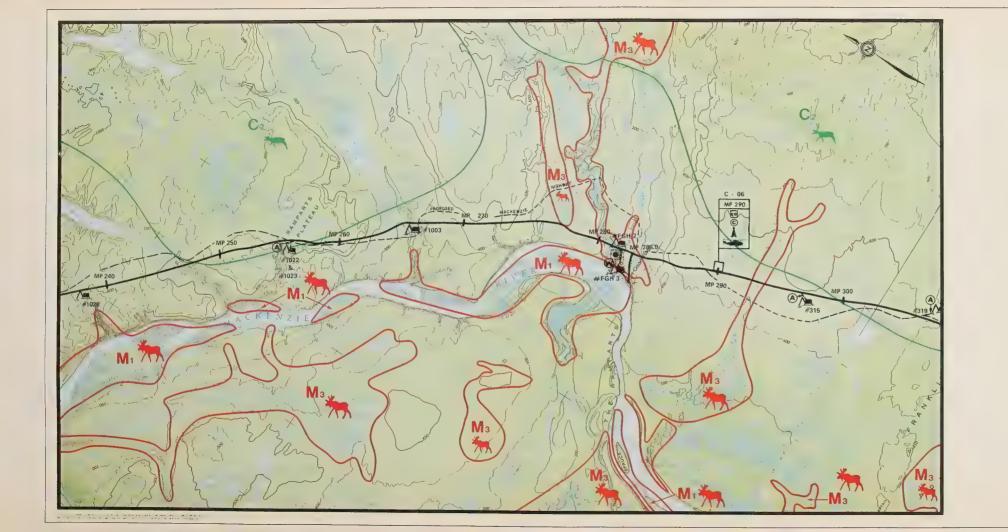
PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	©
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COMPRESSOR STATION WITH CHILLING	FF	PERMANENT ACCESS ROAD	—(A)—
METER STATION	M	TEMPORARY ACCESS ROAD	A
MATERIAL STOCKPILE SITE	(6)	PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	
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### ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS



CLASS 1 BEST AVAILABLE HABITAT CLASS 2 INTERMEDIATE QUALITY HABITAT CLASS 3 POOR QUALITY HABITAT NOT RATED HABITAT OF MARGINAL OR

INSIGNIFICANT QUALITY REINDEER RESERVE BOUNDARY

### DESCRIPTOR

Example. Mg indicates hebital unit comprising intermediate modes habitat

### PIPELINE LEGEND

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ENVIRONMENTAL MAP

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ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS

C CARIBOU CLASS 1 BEST AVAILABLE HABITAT

MOOSE CLASS 2 INTERMEDIATE QUALITY HABITAT

R RINDEER CLASS 3 FOOR QUALITY HABITAT

S DALL SHEEP NOT RATED HABITAT OF MARGINAL OR

REINDEER RESERVE BOUNDARY INSIGNIFICANT QUALITY

DESCRIPTOR

Example: M2 Indicates habitat unit comprising intermediate moose habitat

### PIPELINE LEGEND

PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	©
COMPRESSOR STATION	0	PROPOSED HELIPAD	-
COMPRESSOR STATION WITH CHILLING	66	PERMANENT ACCESS ROAD	—(A)—
METER STATION	(ME	TEMPORARY ACCESS ROAD	A
MATERIAL STOCKPILE SITE	(4)	PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	
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CNT REPEATER STATION	ž.		

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### UNGULATE MAMMALS

ENVIRONMENT LEGEND

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DESCRIPTOR

HABITAT UNIT BOUNDARIES

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PIPELINE LEGEND

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ENVIRONMENTAL MAP

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# MP 438

# UNGULATE MAMMALS

### ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES

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DESCRIPTOR

Example M<sub>2</sub> indicates habital unit comprising intermediate moose habital

### PIPELINE LEGEND

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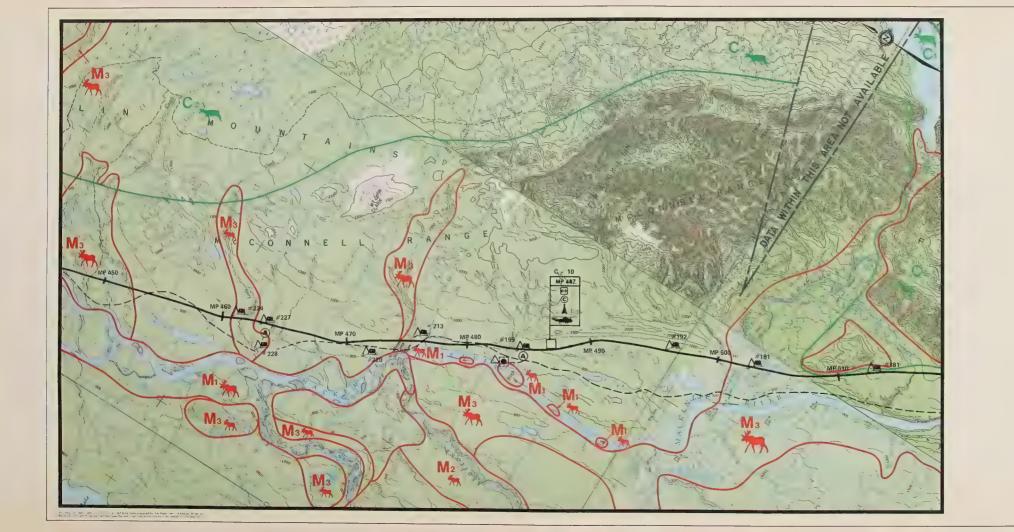
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ENVIRONMENTAL MAP

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### ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS



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CLASS 2 INTERMEDIATE QUALITY HABITAT POOR QUALITY HABITAT NOT RATED HABITAT OF MARGINAL OR INSIGNIFICANT QUALITY

REINDEER RESERVE BOUNDARY

DESCRIPTOR

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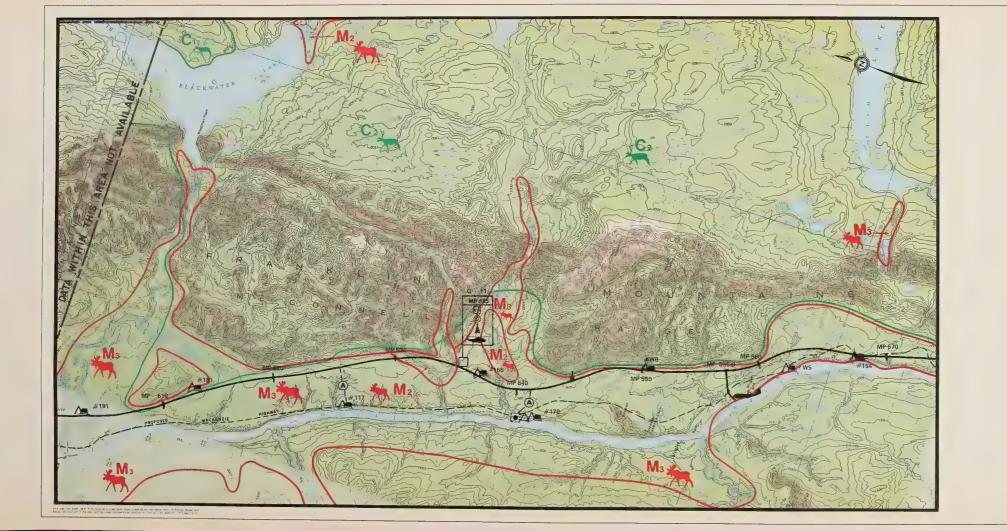
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ENVIRONMENTAL MAP

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ENVIRONMENT LEGEND

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DESCRIPTOR

Example: M2 indicates hibitat unit comprising informatiate moose hibitat.

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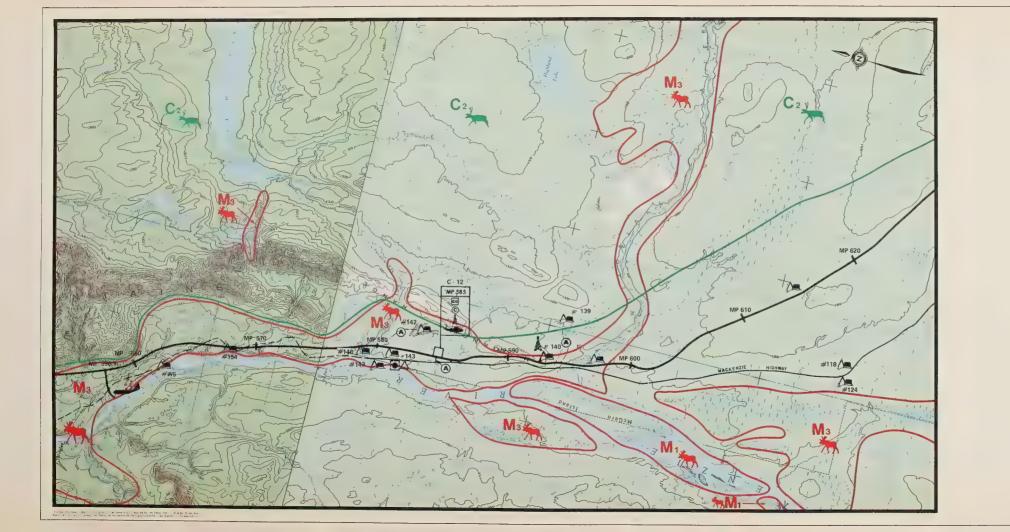
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ENVIRONMENTAL MAP

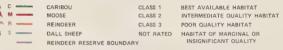
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### ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS



DESCRIPTOR

Example Mg indicates habites unit comprising intermediate moose hebitss

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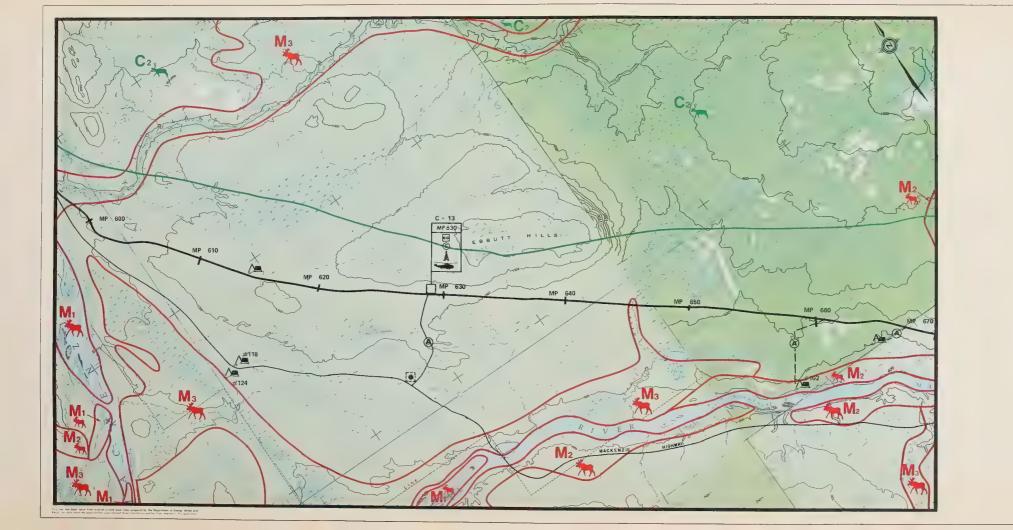
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# ENVIRONMENTAL MAP

PREPARED FOR

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### ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS

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			REINDEER	CLASS 3	POOR QUALITY HABITAT
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### DESCRIPTOR

Example. M2 Indicates habitat unit comprising intermediate moose habitet

### PIPELINE LEGEND

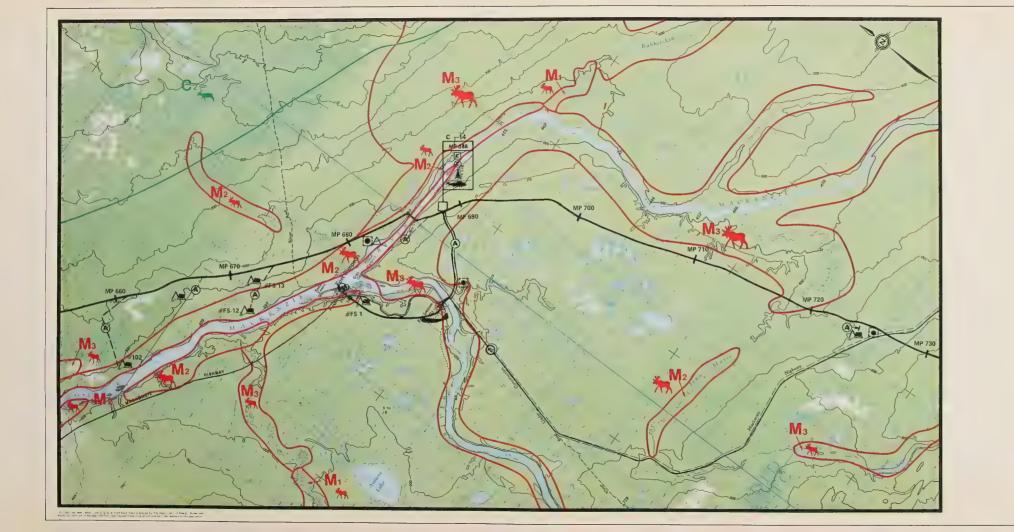
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ENVIRONMENTAL MAP

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### ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS



### DESCRIPTOR

Example M<sub>2</sub> indicates habitat unit comprising intermediate moose hebitet

### PIPELINE LEGEND

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ENVIRONMENTAL MAP

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### ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES

HABITAT CLASS RATINGS

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CLASS 1 BEST AVAILABLE HABITAT
CLASS 2 INTERMEDIATE QUALITY HABITAT
CLASS 3 POOR QUALITY HABITAT
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ENVIRONMENTAL MAP

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### ENVIRONMENT LEGEND

HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS

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n.	М		MOOSE	CLASS 2	INTERMEDIATE QUALITY HABIT
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ENVIRONMENTAL MAP

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# BIRDS AND FISH

### BIRDS

### BACKGROUND

In the following series of maps, birds are considered in two groups: waterfowl and rare and endangered raptors. These two groups traditionally have been regarded as comprising the most economically and aesthetically important avifauna in the region. An appropriate information base for mapping the distribution of other species or groups of birds is non-existent.

Information presented in the map series includes the location and relative importance of waterfowl breeding habitats, the location of critical concentration areas for waterfowl, and the general locations of actual and potential nesting habitat of rare and endangered raptors such as the Peregrine Falcon(Falco peregrinus), Gyrfalcon(Falco rusticolus), Bald Eagle (Haliaeetus leucocephalus), Golden Eagle (Aguila chrysaetos), and Osprey (Pandion haliaetus). Information on the locations of raptor nesting habitats is generalized for reasons of security since the eggs and young of species such as the peregrine are extremely valuable on the illicit market.

A three class rating system has been used in apportioning the map area according to waterfowl breeding habitat quality. This classification system was developed by the Canadian Wildlife Service. Characteristics of habitat units in each class are as follows:

### Class 1

These units comprise excellent northern waterfowl habitat exhibiting complex, fertile environments with high ratios of wetlands to uplands. These areas have potential to support high densities of waterfowl.

### Class 2

These areas comprise very good to good waterfowl habitat, but are less complex and of lower quality than those rated as Class 1, due to factors including flooding, infertility, and drainage restriction.

### Class 3

Habitat units in this class are rated as fair to poor waterfowl habitat. These units exhibit moderate to severe restrictions in relation to complexity and quality.

Critical concentration areas, which include those areas used by waterfowl during spring migration, summer moulting, and staging prior to fall migration, have been generally outlined. These areas are extremely important to the welfare of northern waterfowl populations.

Present and potential nesting areas of rare and endangered raptor species have been approximated on the map sheets. Such areas are indicated both along the general pipeline route and at some distance from the route. Areas along the route have been identified if the route lies within five miles of presently used or potential nesting habitats.

### INFORMATION SOURCES

Following is a bibliographic list of information sources used during preparation of the map sheets.

- Fooks, C.E., R.W. Fyfe and J.B. Kemper. 1974 Highway Raptor Interaction for the Mackenzie Highway. Canadian Wildlife Service and Canada Department of Public Works, Edmonton, Alberta. 7pp. mimeo.
- Fyfe, R.W. and W.H. Prescott. 1973. Endangered Raptor Breeding Territories Near the Mackenzie Highway Route and their Protection. Canadian Wildlife Service; Environmental Working Group, Ottawa. 18 pp. mimeo.
- Poston, H.J., A.J. Doberstein, and S.R. Barber. 1973. Atlas of Waterfowl Habitat Maps. Wildlife Habitat Inventory of the Mackenzie Valley and Northern Yukon. Canadian Wildlife Service. Edmonton.
- Renewable Resources Consulting Service Ltd. 1972. Arctic Ecology Map Series. Canadian Wildlife Service. Ottawa.
- Schultz International Ltd. 1974. Base Data Report, Section D Mackenzie Highway, Miles 715 to 936. Canada Department of Public Works. Edmonton.
- Watson, G.H. (ed.). 1973. An Inventory of Wildlife Habitat of the Mackenzie Valley and Northern Yukon. Canadian Wildlife Service; Environmental-Social Program, Northern Pipelines. Report No. 73-23.

### FISH

### BACKGROUND

Streams and rivers crossed by the pipeline route, and for which information is available, have been evaluated on the basis of four variables; presence of fish, major use made of the stream by fish, species diversity, and existing or potential use of the fish resource. Only those streams where catch records indicate the occurrence of fish have been evaluated.

The major function of individual watercourses in relation to fish resources has been assigned one of the following designations: migration route, spawning area, nursery area, or overwintering area. In cases where authors have differed in their assessment of the major use by fish of a particular stream or river, or where more than one function has been identified, a judgement was made as to the most important fisheries function of that watercourse and the corresponding assignment was applied

Fifty-three watercourses were rated according to the diversity of fish species found in them, and assigned one of the following ratings: high species diversity, intermediate species diversity, or low species diversity.

Qualification for these ratings is as follows

High species diversity = 11 · 16 species

Intermediate species diversity = 6 · 10 species

Low species diversity = 1 · 5 species

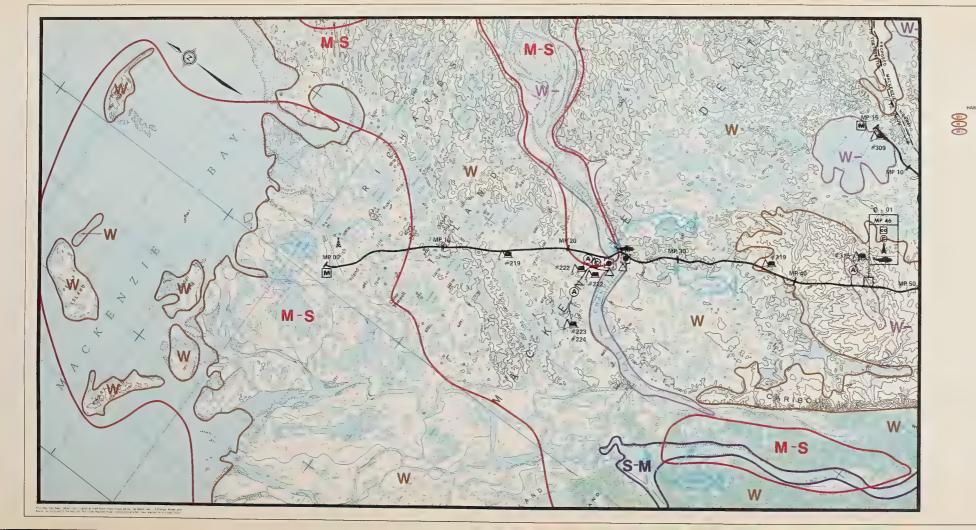
The class limits were set on the basis that 16 species represented the greatest diversity found in any of the sampled watercourses.

Finally, the fish resources of each watercourse are rated according to existing or potential socio-economic use. Possible exploitation modes include domestic fishery, commercial fishery, and recreational fishery. The rating is based upon known use patterns and a subjective evaluation of capability that relates to types and diversity of species present in the watercourse.

### INFORMATION SOURCES

The sources of information used during evaluation of the fish resources are referenced below.

- Aquatic Environments Ltd. and Northern Engineering Services Co. Ltd 1974. Catalogue of lakes and streams in Canada along routes of the proposed Arctic gas pipeline from the Alaskan/Canadian border to the 60th parallel. Canadian Arctic Gas Study Limited, Biological Report Series, Vol. 16
- Aquatic Environments Ltd. 1974. Life histories of anadromous and fresh water fish in the western Arctic. Canadian Arctic Gas Study Limited, Biological Report Series Vol. 20
- Environmental Protection Board. 1973. Interim report No. 3: Towards an environmental impact assessment of the portion of the Mackenzie gas pipeline from Alaska to Alberta. Appendix II: Fish base data.
- Hatfield, C.T., J.N. Stein, M.R. Falk, C.S. Jessop. 1972. Fish resources of the Mackenzie River Valley, Interim report 2, Volume 1. Environment Canada. Fisheries Service. Winnipeg
- Hatfield, C.T., J.N. Stein, M.R. Falk, C.S. Jessop and D.N. Shepherd. 1972.
  Fish resources of the Mackenzie River Valley, Interim Report 2, Volume II. Environment Canada, Fisheries Service, Winniped.
- Jessop, C.S., K.T.J. Chang-Kue, J.W. Lilley, and R.J. Percy. 1974. A further evaluation of the fish resources of the Mackenzie River Valley as related to pipeline development. Environment Canada, Fisheries Service. Winnipea
- Lombard North Group Ltd. 1974. Environmental impact study, Mackenzie Highway mile 550-725. Canada Dept. of Public Works. Edmonton.
- Mcphail, J.O. and C.C. Lindsey. 1970. Freshwater fishes of northerwestern Canada and Alaska. Fisheries Research Board of Canada, Ottawa. Bulletin 173
- Schultz International Ltd. 1974. Base data report, section D Mackenzie Highway, miles 715 to 936, Canada Dept. of Public Works, Edmonton.
- Slaney, F.F. & Co. Ltd. 1974. Aquatic resources; Volume 6, Environmental Program, Mackenzie Delta, N.W.T., Canada. Prepared for Imperial Oil Ltd..
- Stein, J.N., C.S. Jessop, T.R. Ponter, and K.T.J. Chang-Kue. 1973. An evaluation of the fish resources of the Mackenzie River Valley as related to pipeline development; Volume 1. Environment Canada, Fisheries Service. Information Canada. Cat. No. FS 37 1973/1-1.
- Unies Ltd. 1974. Environmental impact assessment of the portion of the Mackenzie gas pipeline from Alaska to Alberta. Chapter 7: Water. Environment Proctection Board, Winnipeg.



### ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL

HABITAT CLASS RATINGS EXCELLENT
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W FAIR TO POOR

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RARE AND ENDANGERED RAPTORS GENERAL NESTING AREAS SECTIONS OF PIPELINE CORRIDOR PROXIMAL TO NESTING AREAS

CONSECUTIVE ALPHAMERIC CLASSIFICATION

FIRST LETTER

HIGH SPECIES DIVERSITY 2 INTERMEDIATE SPECIES DIVERSITY NURSERY 3 LOW SPECIES DIVERSITY

OVERWINTERING SECOND LETTER

D DOMESTIC FISHERY EXISTING OR POTENTIAL

C COMMERCIAL FISHERY, EXISTING OR POTENTIAL R RECREATION FISHERY POTENTIAL

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### PIPELINE LEGEND

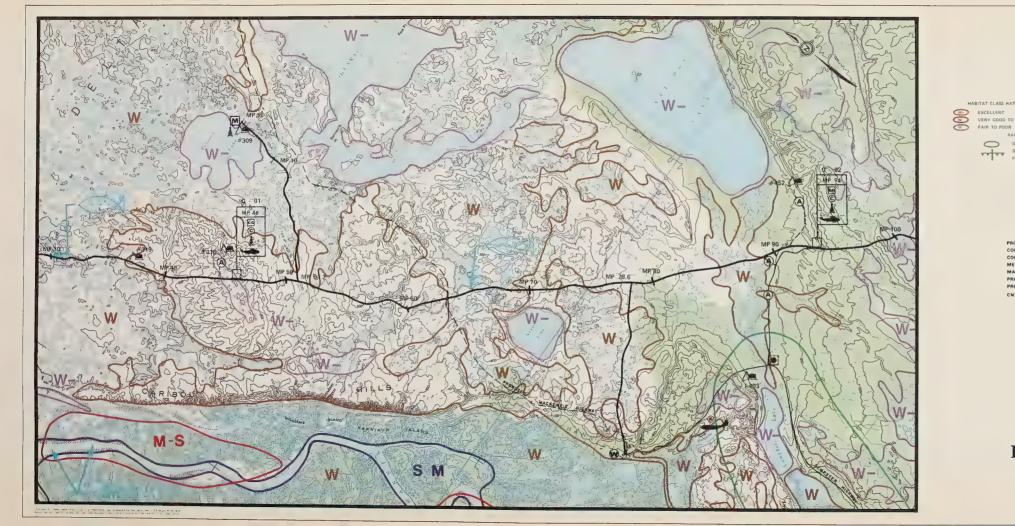
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NOTE THE LOCATION OF TEMPORARY CONSTRUCTION FACILITIES AND PERMANENT INSTALLATIONS IS NOT FINAL AND IS SUBJECT TO CHANGE UPON COMPLETION OF DETAILED SITE INVESTIGATION AND LOGISTICS STUDIES

ENVIRONMENTAL MAP PREPARED FOR

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### ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL HABITAT CLASS RATINGS CRITICAL CONCENTRATION AREAS

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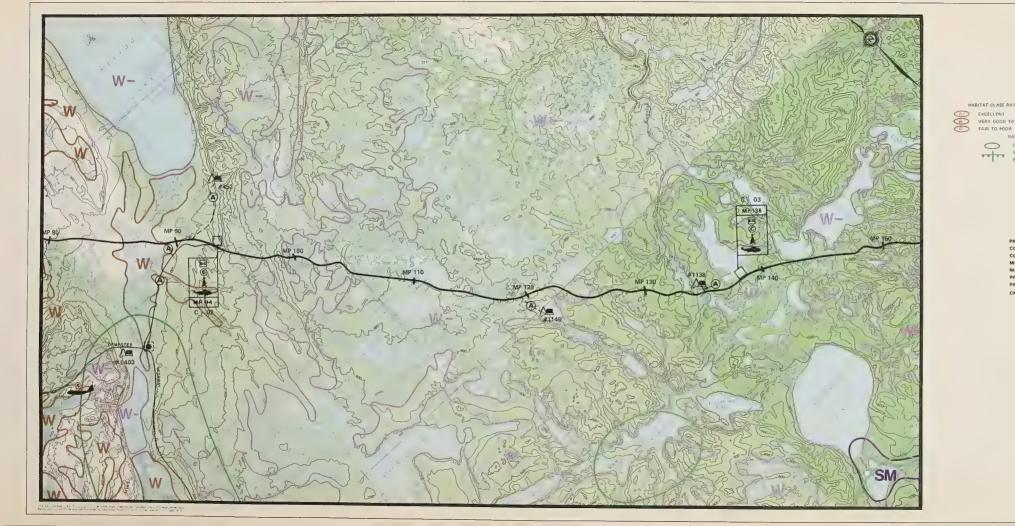
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# ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL

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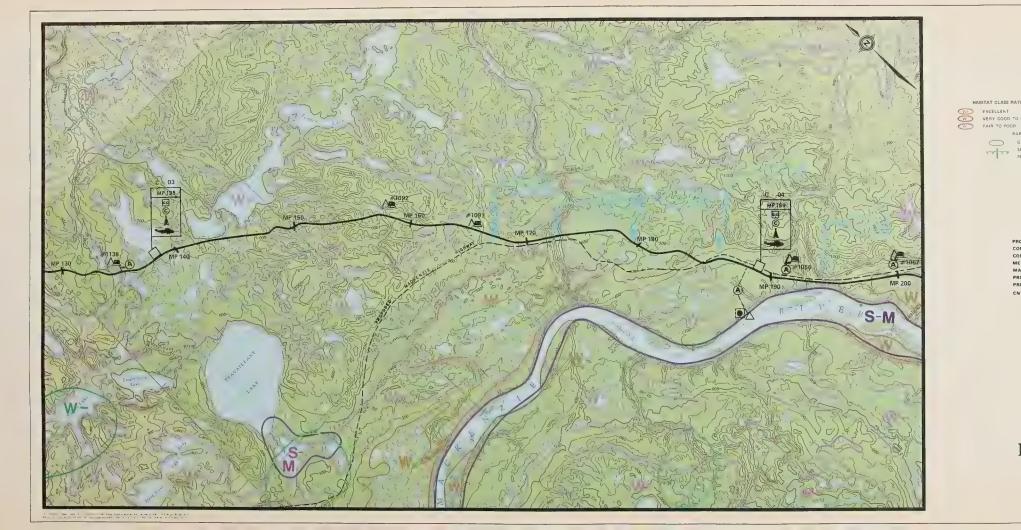
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ENVIRONMENTAL MAP PREPARED FOR

# FOOTHILLS PIPE LINES LTD.



### ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL

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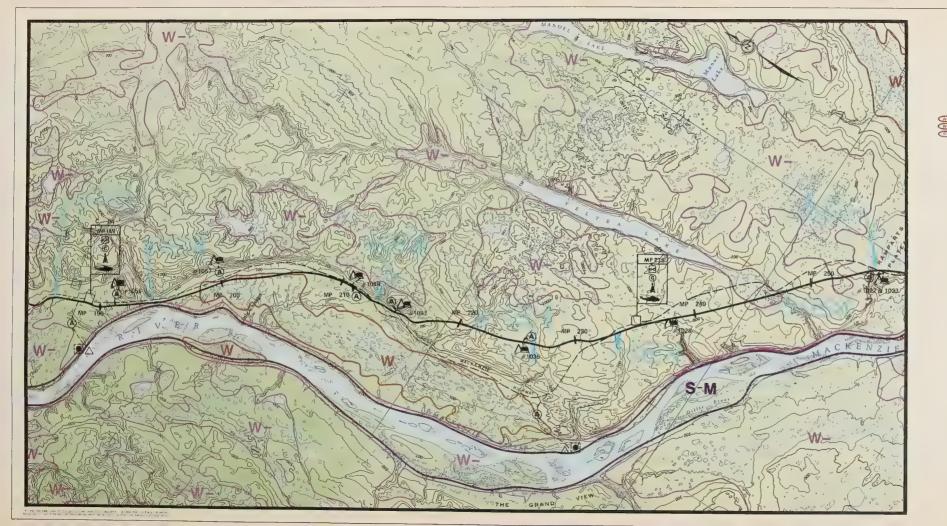
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PIPELINE LEGEND

ENVIRONMENTAL MAP

PREPARED FOR

FOOTHILLS PIPE LINES LTD.



### ENVIRONMENTAL LEGEND

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# PIPELINE LEGEND

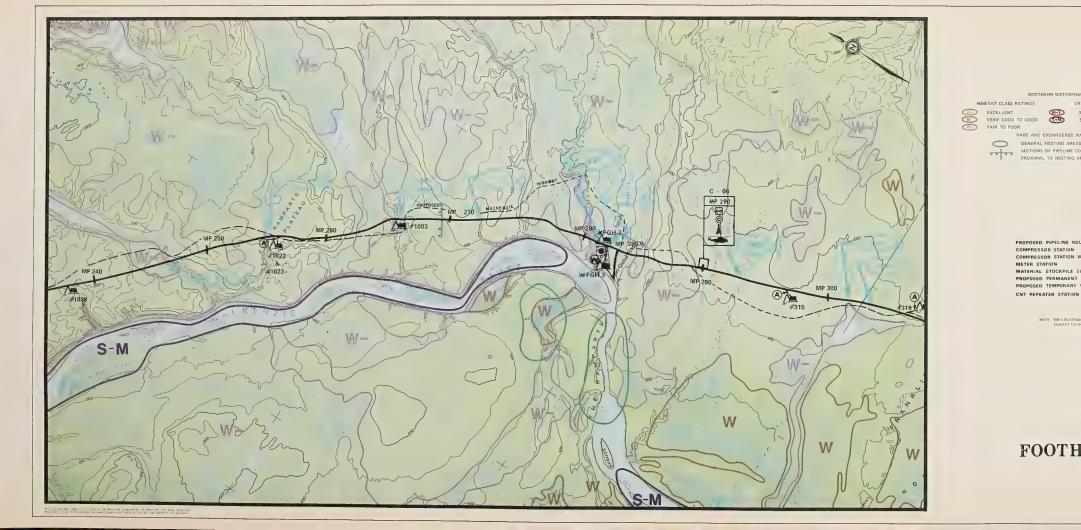
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ENVIRONMENTAL MAP

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### ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL

CRITICAL CONCENTRATION AREAS

MOULTING AND/OR STAGING

RARE AND ENDANGERED RAPTORS GENERAL NESTING AREAS SECTIONS OF PIPELINE CORRIDOR
PROXIMAL TO NESTING AREAS

CONSECUTIVE ALPHAMERIC CLASSIFICATION

FIRST LETTER

MIGRATION ROUTE 1 HIGH SPECIES DIVERSITY 2 INTERMEDIATE SPECIES DIVERSITY

3 LOW SPECIES DIVERSITY

NURSERY OVERWINTERING

SECOND LETTER

D DOMESTIC FISHERY, EXISTING OR POTENTIAL
C COMMERCIAL FISHERY EXISTING OR POTENTIAL RECREATION FISHERY POTENTIAL

PIPELINE LEGEND

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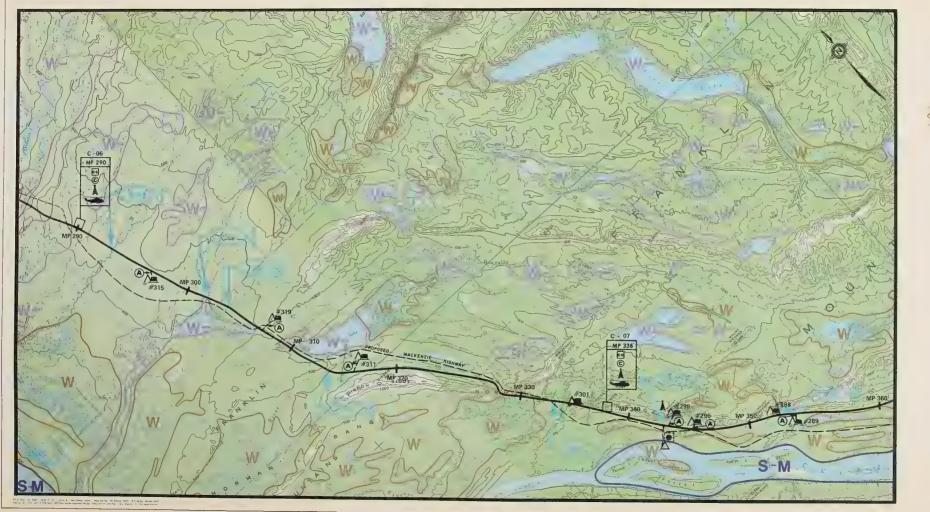
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ENVIRONMENTAL MAP

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#### ENVIRONMENTAL LEGEND

MORTHERN WATERFOWL

HABITAT CLASS RATINGS

CRITICAL CONCENTRATION AREAS

EXCELLENT

VERY GOOD TO GOOD

FAIR TO POOR

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RARE AND ENDANGERED RAPTORS

GENERAL NESTING AREAS

SECTIONS OF PIPELINE CORRIDOR

PROXIMAL TO DESTING AREAS

CONSECUTIVE ALPHAMERIC CLASSIFICATION
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R RECERTION FISHERY POTENTIAL

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# PIPELINE LEGEND

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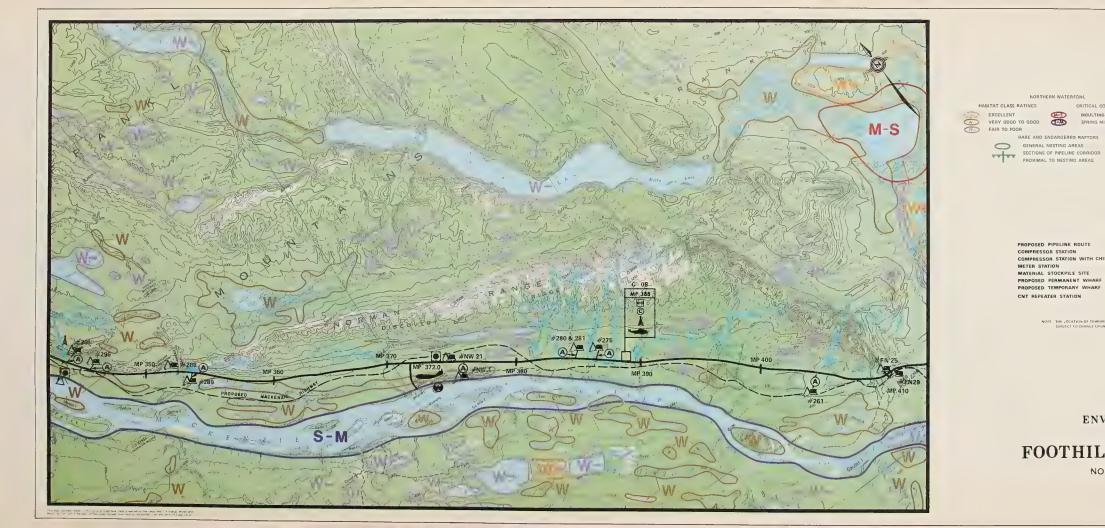
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EXISTING HIGHWAY
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ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.



# ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL

CRITICAL CONCENTRATION AREAS

MOULTING AND/OR STAGING

BARE AND ENDANGERED RAPTORS GENERAL NESTING AREAS

CONSECUTIVE ALPHAMERIC CLASSIFICATION

FIRST LETTER NUMBER

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SECOND LETTER

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C COMMERCIAL FISHERY EXISTING OR POTENTIAL M2D RECREATION FISHERY, POTENTIAL

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# PIPELINE LEGEND

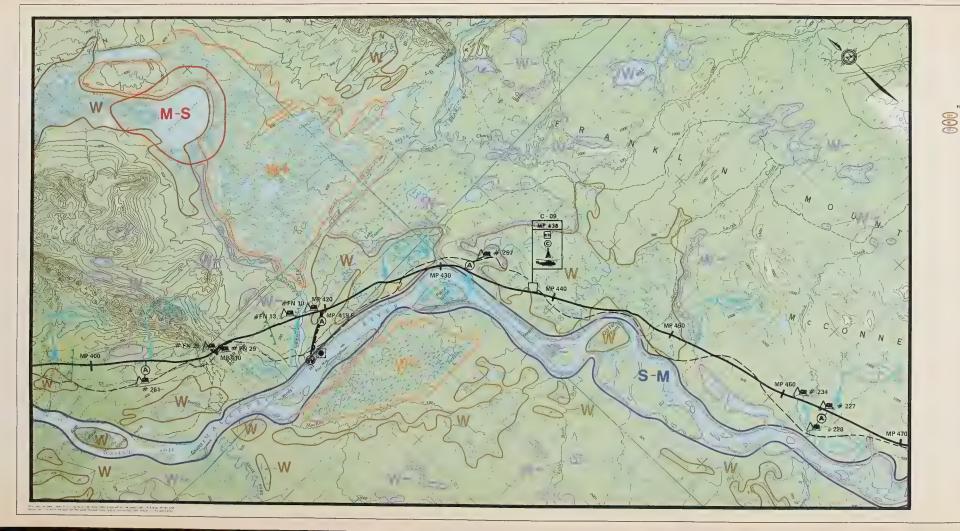
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ENVIRONMENTAL MAP

PREPARED FOR

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# ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL

HABITAT CLASS RATINGS EXCELLENT VERY GOOD TO GOOD FAIR TO POOR

CRITICAL CONCENTRATION AREAS

BARE AND ENDANGERED BAPTORS GENERAL NESTING AREAS SECTIONS OF PIPELINE CORRIDOR PROXIMAL TO NESTING AREAS

CONSECUTIVE ALPHAMERIC CLASSIFICATION

MIGRATION ROUTE 1 HIGH SPECIES DIVERSITY 2 INTERMEDIATE SPECIES DIVERSITY 3 LOW SPECIES DIVERSITY

SECOND LETTER

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# PIPELINE LEGEND

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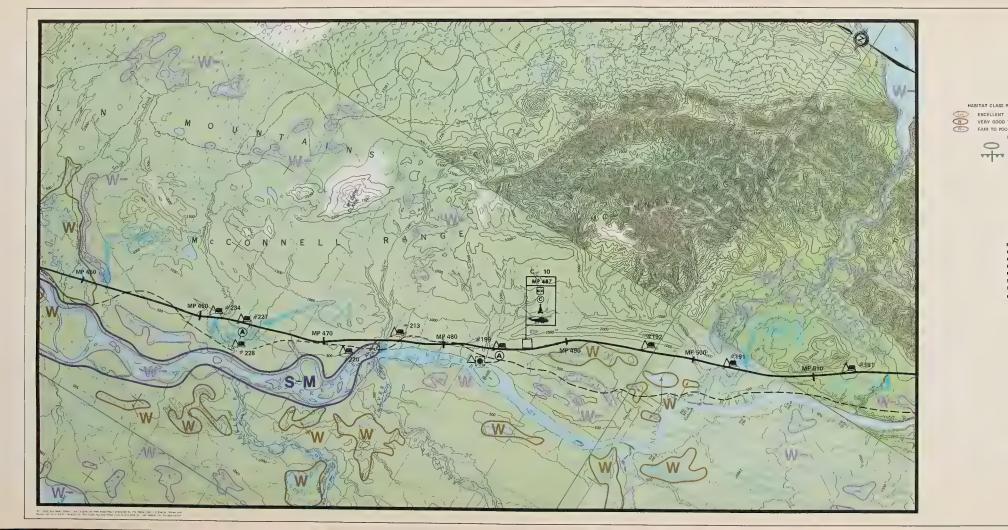
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ENVIRONMENTAL MAP

PREPARED FOR

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### ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL

HABITAT CLASS RATINGS CRITICAL CONCENTRATION AREAS

VERY GOOD TO GOOD
FAIR TO POOR

MOULTING AND/OR STAGING

RARE AND ENDANGERED RAPTORS

GENERAL NESTING AREAS SECTIONS OF PIPELINE CORRIDOR

CONSECUTIVE ALPHAMERIC CLASSIFICATION

MIGRATION ROUTE 1 HIGH SPECIES DIVERSITY 2 INTERMEDIATE SPECIES DIVERSITY 3 LOW SPECIES DIVERSITY

O OVERWINTERING

NURSERY

SECOND LETTER

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R RECREATION FISHERY, POTENTIAL

### PIPELINE LEGEND

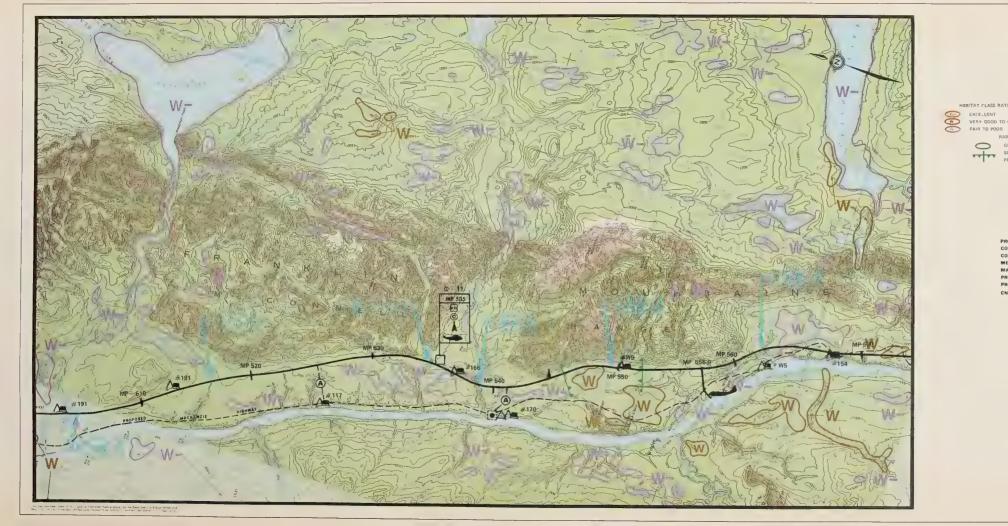
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NOTE THE LOCATION OF TEMPORARY CONSTRUCTION FACILITIES AND PERMANENT INSTRUCTIONS IS NOT FINAL AND SUBJECT TO CHANGE UPON COMPLETION OF DETAILED SITE INVESTIGATION AND LOGISTICS STUDIES.

ENVIRONMENTAL MAP PREPARED FOR

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### ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL

HARITAT CLASS BATINGS CRITICAL CONCENTRATION AREAS VERY GOOD TO GOOD

MOULTING AND/OR STAGING

RARE AND ENDANGERED RAPTORS GENERAL NESTING AREAS SECTIONS OF PIPELINE CORRIDOR
PROXIMAL TO NESTING AREAS

CONSECUTIVE ALPHAMERIC CLASSIFICATION

FIRST LETTER NUMBER

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SECOND LETTER

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# PIPELINE LEGEND

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### ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL

CRITICAL CONCENTRATION AREAS

EXCELLENT VERY GOOD TO GOOD

MOULTING AND/OR STAGING

HARE AND ENDANGERED RAPTORS GENERAL NESTING AREAS SECTIONS OF PIPELINE CORRIDOR PROXIMAL TO NESTING AREAS

CONSECUTIVE ALPHAMERIC CLASSIFICATION

FIRST LETTER NUMBER MIGRATION ROUTE 1 HIGH SPECIES DIVERSITY

NTERMEDIATE SPECIES DIVERSITY NURSERY 3 LOW SPECIES DIVERSITY OVERWINTERING

SECOND LETTER

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R RECREATION FISHERY POTENTIAL

### PIPELINE LEGEND

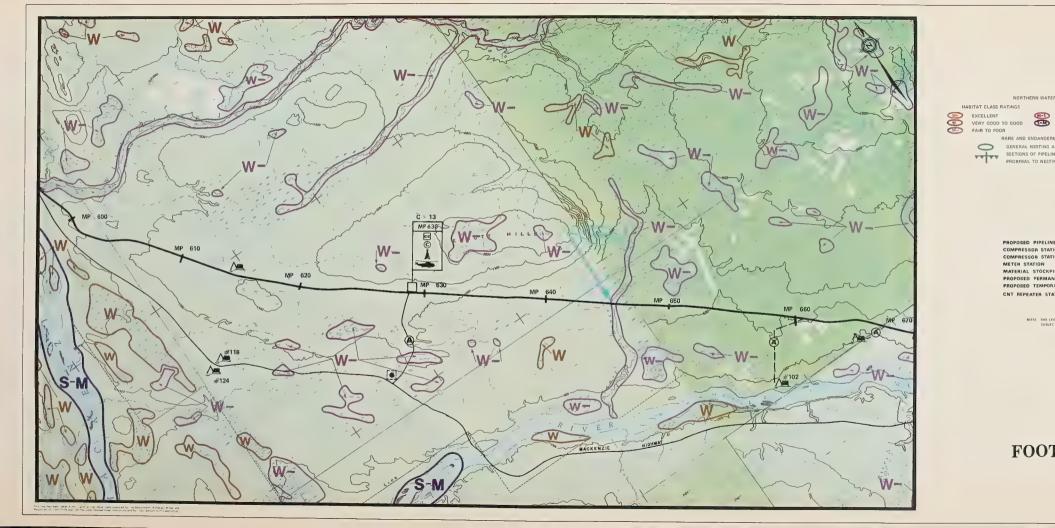
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# ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL

HABITAT CLASS RATINGS

CRITICAL CONCENTRATION AREAS

RARE AND ENDANGERED RAPTORS GENERAL NESTING AREAS SECTIONS OF PIPELINE CORRIDOR PROXIMAL TO NESTING AREAS

CONSECUTIVE ALPHAMERIC CLASSIFICATION

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# PIPELINE LEGEND

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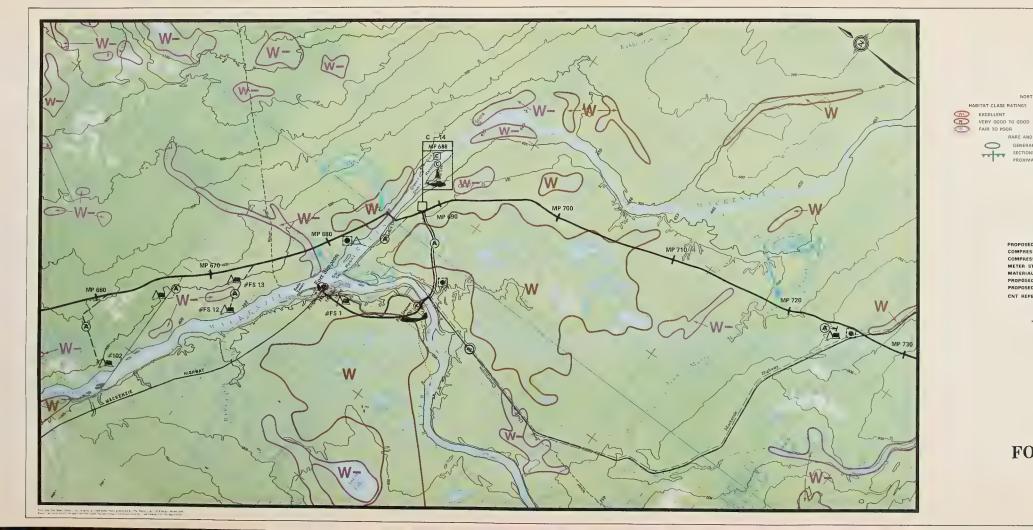


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ENVIRONMENTAL MAP

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### ENVIRONMENTAL LEGEND

O OVERWINTERING

NORTHERN WATERFOWL

CRITICAL CONCENTRATION AREAS

EXCELLENT VERY GOOD TO GOOD

MOULTING AND/OR STAGING

RARE AND ENDANGERED RAPTORS GENERAL NESTING AREAS SECTIONS OF PIPELINE CORRIDOR PROXIMAL TO NESTING AREAS

CONSECUTIVE ALPHAMERIC CLASSIFICATION

FIRST LETTER NUMBER MIGRATION ROUTE 1 HIGH SPECIES DIVERSITY SPAWNING INTERMEDIATE SPECIES DIVERSITY NURSERY 3 LOW SPECIES DIVERSITY

SECOND LETTER

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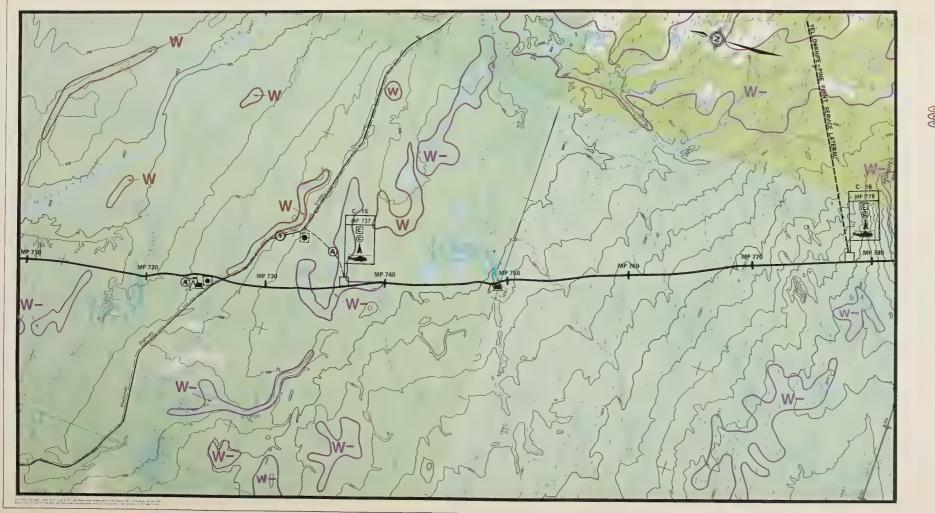
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# ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL HABITAT CLASS RATINGS CRITICAL CONCENTRATION AREAS EXCELLENT
VERY GOOD TO GOOD
FAIR TO POOR MOULTING AND/OR STAGING

RARE AND ENDANGERED RAPTORS GENERAL NESTING AREAS SECTIONS OF PIPELINE CORRIDOR

FISH CONSECUTIVE ALPHAMERIC CLASSIFICATION

M MIGRATION ROUTE 1 HIGH SPECIES DIVERSITY 2 INTERMEDIATE SPECIES DIVERSITY 3 LOW SPECIES DIVERSITY O OVERWINTERING

SECOND LETTER D DOMESTIC FISHERY EXISTING OR POTENTIAL

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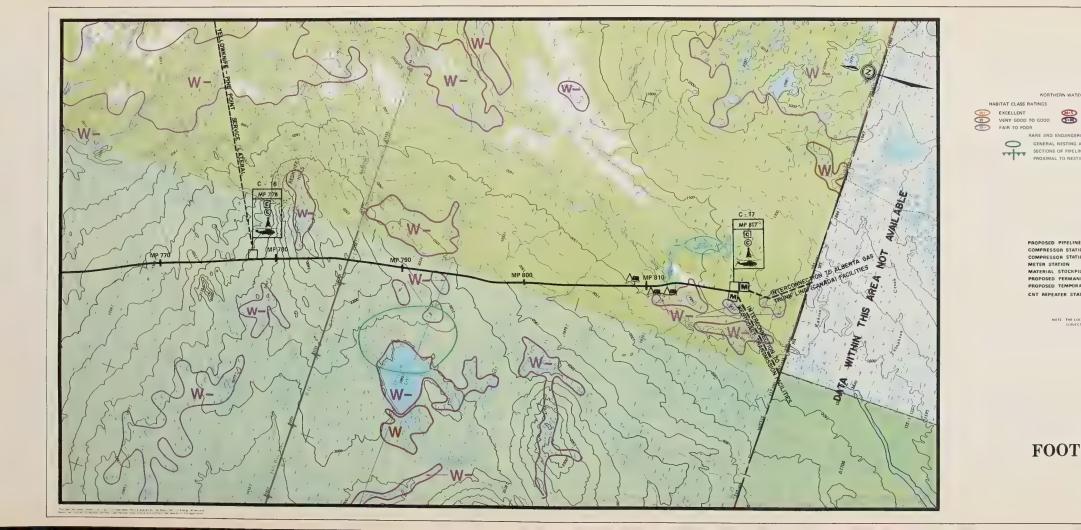
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ENVIRONMENTAL MAP

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# ENVIRONMENTAL LEGEND

NORTHERN WATERFOWL

CRITICAL CONCENTRATION AREAS

RARE AND ENDANGERED RAPTORS GENERAL NESTING AREAS SECTIONS OF PIPELINE CORRIDOR
PROXIMAL TO NESTING AREAS

MIGRATION ROUTE 1 HIGH SPECIES DIVERSITY 2 INTERMEDIATE SPECIES DIVERSITY NURSERY 3 LOW SPECIES DIVERSITY

CONSECUTIVE ALPHAMERIC CLASSIFICATION

O OVERWINTERING SECOND LETTER

DOMESTIC FISHERY EXISTING OR POTENTIAL M2D COMMERCIAL FISHERY EXISTING OR POTENTIAL

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# PIPELINE LEGEND

PROPOSED PIPELINE ROUTE COMPRESSOR STATION COMPRESSOR STATION WITH CHILLING METER STATION MATERIAL STOCKPILE SITE PROPOSED PERMANENT WHARF PROPOSED TEMPORARY WHARF CNT REPEATER STATION

CONSTRUCTION CAMP (TEMPORARY) PROPOSED HELIPAD PERMANENT ACCESS ROAD TEMPORARY ACCESS ROAD PROPOSED HIGHWAY EXISTING HIGHWAY BORROW AREA

NOTE THE LOCATION OF TEMPORARY CONSTRUCTION FACILITIES AND PERMANENT INSTALLATIONS IS NOT FINAL AND IS SUBJECT TO CHANGE UPON COMPLETION OF DETAILED SITE, NYESTICATION AND LOCISTICS STUDIES

ENVIRONMENTAL MAP

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# BACKGROUND

The species considered in the following series of maps include:

 Beaver
 (B)
 —
 Castor canadensis

 Muskrat
 (M)
 —
 Ondatra zibethicus

 Arctic fox
 (F)
 —
 Alopex lagopus

 Grizzly bear
 (B)
 —
 Ursus arctos horribilis

 Beluga whale
 (W)
 —
 Delphinapterus leucas

In addition to the above, known denning areas of bear, fox, and wolves have also been indicated. Species specific information presented on the maps includes an indication of species presence and an evaluation of the mapped area in relation to the areal coverage and quality of habitats with respect to the subject species.

The class rating scheme for habitat units was adapted from the habitat evaluation system used by the Canadian Wildlife Service. The criteria used in evaluating habitats were as follows:

- The number and distribution of the subject species within the area over one or more seasons of the year.
- 2 The consistency of utilization of the area by the subject species.
- The degree to which the area provides the species habitat requisites, including cover and forage.
- The presence of specific use sites such as calving and nursery areas and den sites within the area resulted in a Class 1 rating being applied to the area.

A three class system was used in the rating of habitat units as they appear on the following maps. The characteristics of each of these classes is as follows:

#### Class 1

These units generally comprise the best available habitats for the subject species within the Mackenzie Valley and adjacent area. Size is the only known limitation on the value of these units.

### Class 2

Habitat units in this class are characterized by moderate limitations in quality. An example of such limitations would be poor interspersion of food and cover requirements, even though both are found within the unit.

# Class 3

Habitat units with this rating are only marginal in value and used only occasionally by the subject species.

### INFORMATION SOURCES

The wildlife habitat inventories prepared by the Canadian Wildlife Service served as one of the primary information sources. These inventories were updated wherever possible and supplemented by data from other sources. Reports prepared by F.F. Slaney and Company Ltd. provided much of the information on beluga whales. Bibliographic references of reports used in the preparation of these maps appear below

- Dennington, M.C., B.E., Johnson, and H.A. Stelfox. 1973. Atlas of beaver and muskrat habitat maps. Wildlife habitat inventory of the Mackenzie Valley and Northern Yukon. Canadian Wildlife Service. Ottawa.
- Hawley, V.D. 1975, Personal communication,
- Nolan, J.W., B.C. Goski and G.W. Wilde. 1973. Atlas of arctic fox habitat maps. Wildlife habitat inventory of the Mackenzie Valley and Northern Yukon. Canadian Wildlife Service. Ottawa.

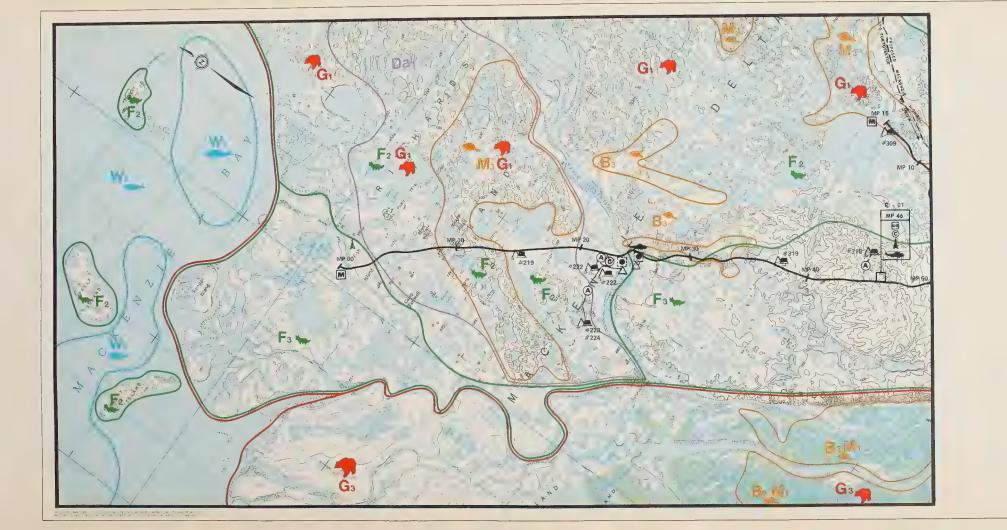
— 1973. Atlas of Dall sheep and grizzly bear habitat maps. Wildlife habitat inventory of the Mackenzie Valley and Northern Yukon. Canadian Wildlife Service, Ottawa.

- Pearson A.M. 1975. Personal communication.
- Schultz, C.D., and Company Ltd. 1974. Addendum No. 1 to Base

  Data Report, Catalogue of Den Sites; Section D, Mackenzie Highway Miles 715-936. Department of Public Works of Canada.

  Edmonton.
- Slaney, F.F. and Comapny Ltd. 1973. Environmental impact assessment, Immerk artificial island construction, Mackenzie Bay N.W.T. Vol. II Environmental studies. Imperial Oil Ltd., Calgary.

- Sterling I.G. 1975. Personal communication.
- Wooly, D.R. 1974. Beaver (<u>Castor canadensis</u>) Studies in the Mackenzie Valley, 1972. <u>IN</u>: Canadian Arctic Gas Study Ltd., Biological Report Series. Vol. 9.
- Zirul, D.L. 1975. Personal communication,



# ENVIRONMENTAL LEGEND

# HABITAT UNIT BOUNDARIES BM — BEAVER, MUSKRAT CLASS 1 BEST AVAILABLE HABITAT F — ARCTIC FOX CLASS 2 INTERMEDIATE GUALITY HABITAT G — GRIZZLY BEAR CLASS 3 FOOR QUALITY HABITAT NOT RATED HABITAT OF MARGINAL OR INSIGNIFICANT QUALITY (for Bears and Wolves)

#### DESCRIPTOR

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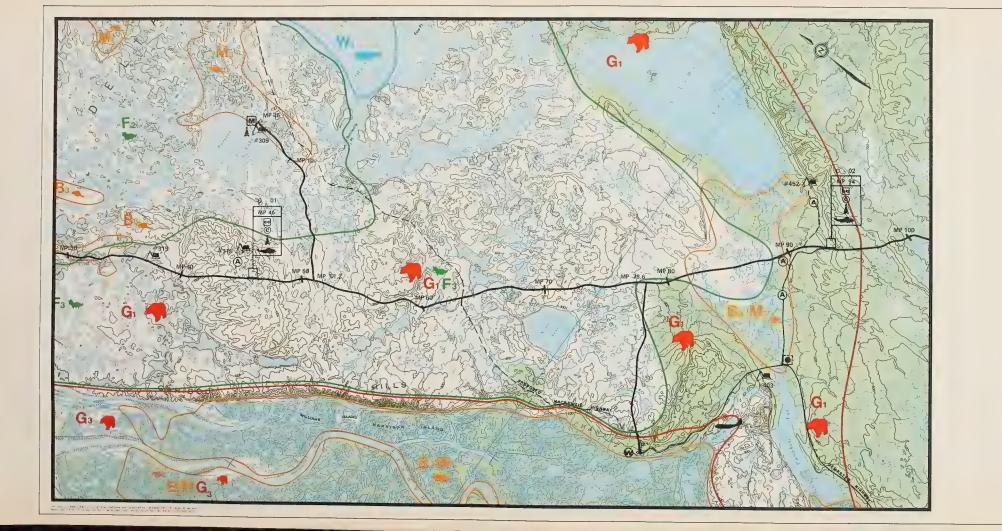
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# PIPELINE LEGEND

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MATERIAL STOCKPILE SITE PROPOSED HIGHWAY	
PROPOSED SERMANENT WHARF (W) EXISTING HIGHWAY	
PROPOSED TEMPORARY WHARF	<u> </u>
CNT DEPEATER STATION	

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### ENVIRONMENTAL LEGEND

HABITAT UNIT BOUNDARIES

BM BEAVER, MUSKRAT

CLASS 1 BEST AVAILABLE HABITAT

F ARCTIC FOX

CLASS 2 INTERMEDIATE QUALITY HABITAT

G GRIZZLY BEAR

CLASS 3 POOR QUALITY HABITAT

W BELIGA WHALE

NOT RATED HABITAT OF MARGINAL OR

KNOWN DENNING AREAS

(for Bears and Wolves)

# DESCRIPTOR

Example. B<sub>3</sub>M<sub>3</sub> indicates habitet unit comprising of poor beaver habitet (class 3) and poor muskrat habitet (class 3)

# PIPELINE LEGEND

PROPOSED PIPELINE RQUTE

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COMPRESSOR STATION

COMPRESSOR CAMPORARY CECES ROAD

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COMPRESSOR CHILDWAY

PROPOSED PERMANENT WHARF

CNT REPEATER STATION

COMPRESSOR HIGHWAY

BORROW AREA

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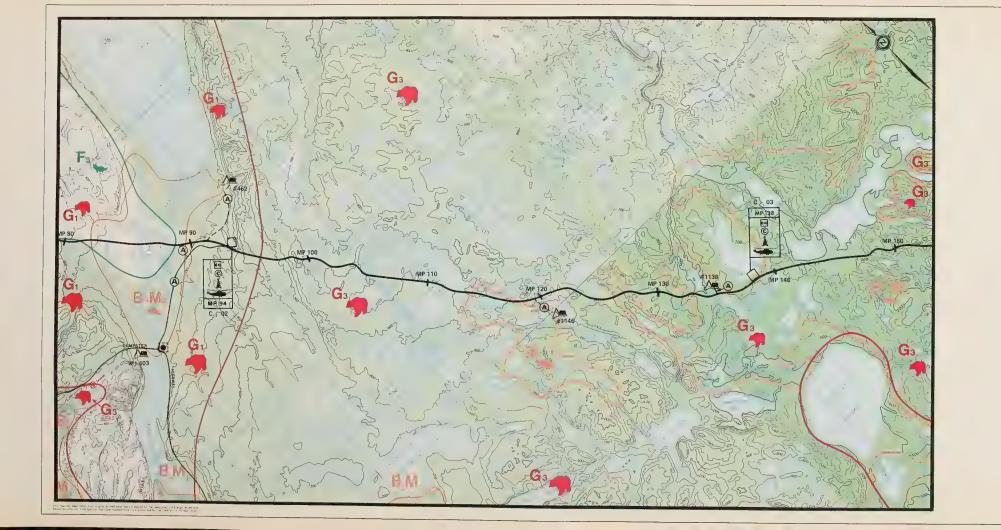
COMPRESSOR CA

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ENVIRONMENTAL MAP

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# ENVIRONMENTAL LEGEND

# HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS BM BEAVER, MUSKRAT CLASS 1 BEST AVAILABLE HABITAT G GAIZZLY BEAR CLASS 2 INTERMEDIATE QUALITY HABITAT G GRIZZLY BEAR CLASS 3 POOR QUALITY HABITAT W BELUGA WHALE NOT RATED HABITAT OF MARGINAL OR KNOWN DENNING AREAS (To Bears and Wolves)

# DESCRIPTOR

Example 83M3 indicates habitat unit compresing of poor beaver habitat (class 3) and poor mushrat habitat Iclass 3)

# PIPELINE LEGEND

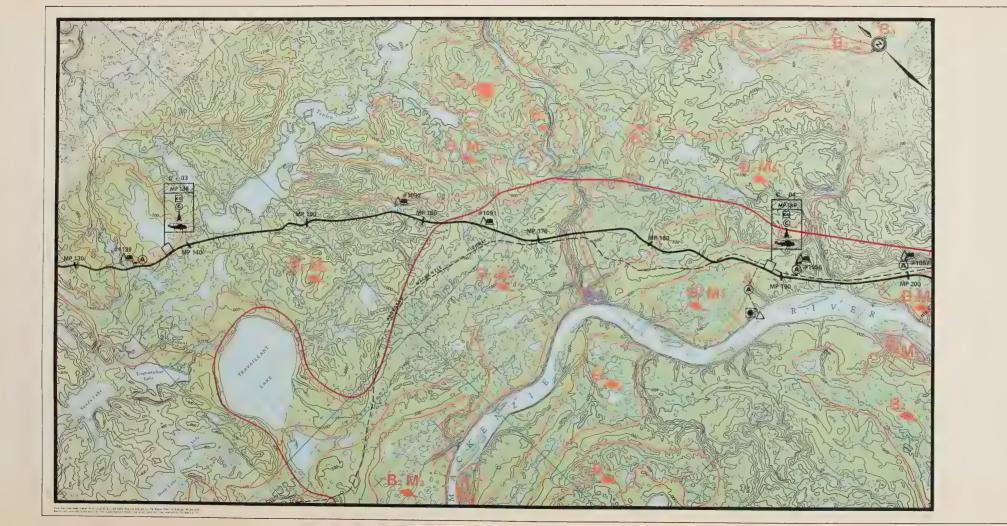
PROPOSED PIPELINE ROUTE	-	CONSTRUCTION CAMP (TEMPORARY)	©
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COMPRESSOR STATION WITH CHILLING	œ	PERMANENT ACCESS ROAD	—(A)—
METER STATION	M	TEMPORARY ACCESS ROAD	A
MATERIAL STOCKPILE SITE	(0)	PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	
PROPOSED TEMPORARY WHARF	Δ	BORROW AREA	<u>/</u> =
CNT REPEATER STATION	Å		~

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# ENVIRONMENTAL MAP

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# FOOTHILLS PIPE LINES LTD.



# ENVIRONMENTAL LEGEND

# HABITAT UNIT BOUNDARIES BAM BEAVER, MUSKRAT G ARCTIC FOX G GRIZZLY BEAR Da KNOWN DENNING AREAS (for Bears and Wolves) CLASS 1 BEST AVAILABLE HABITAT CLASS 2 INTERMEDIATE QUALITY HABITAT CLASS 3 POOR QUALITY HABITAT NOT RATED HABITAT OF MARGINAL OR INSIGNIFICANT QUALITY DESCRIPTOR

# Example $-B_3 M_2$ indicates hebitet unit comprising of poor beaverhabitet (class 3) and poor muskrat habitet iclass 3)

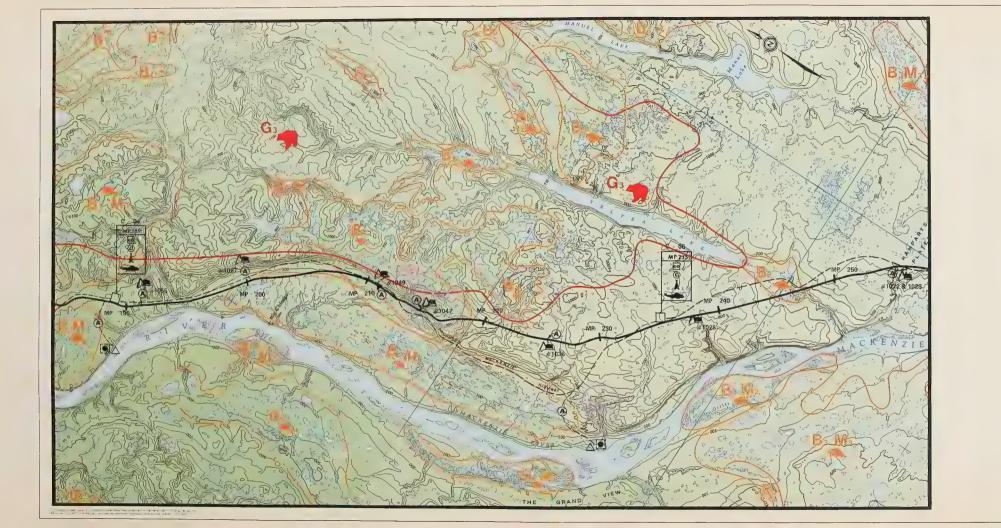
PIPELINE LEGEND				
PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	©	
COMPRESSOR STATION	C	PROPOSED HELIPAD		
COMPRESSOR STATION WITH CHILLING	(cc)	PERMANENT ACCESS ROAD	—(A)—	
METER STATION	(M)	TEMPORARY ACCESS ROAD	(A)	
MATERIAL STOCKPILE SITE	•	PROPOSED HIGHWAY		
PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY		
PROPOSED TEMPORARY WHARF	,	BORROW AREA	^=	
CNT REPEATER STATION	**			

MOTE THE COCATION OF TEMPORANT CONSTRUCT THEAT TELAND PERMANENT INSTALLATING A TENNAL AND SUBJECT TO CHANGE PRINT OMPLET ON THE OUTTAILED OF THE NAESTIGATEN AND LETTER STORMS

# ENVIRONMENTAL MAP

# PREPARED FOR

# FOOTHILLS PIPE LINES LTD.



### ENVIRONMENTAL LEGEND

# HABITAT UNIT BOUNDARIES BM BEAVER, MUSKRAT G ARCTIC FOX G GRIZZLY BEAR W BELUGA WHALE NOT RATED KNOWN DENNING AREAS (for Bears and Wolves) DESCRIPTOR HABITAT CLASS 1 BEST AVAILABLE HABITAT CLASS 2 INTERMEDIATE GUALITY HABITAT NOT RATED HABITAT OF MARGINAL OR INSIGNIFICANT QUALITY DESCRIPTOR

# PIPELINE LEGEND

Example B<sub>3</sub>M<sub>3</sub> indicates habitat unit comprising of poor bears habitat (class 3) and poor muskrat habitat (class 3)

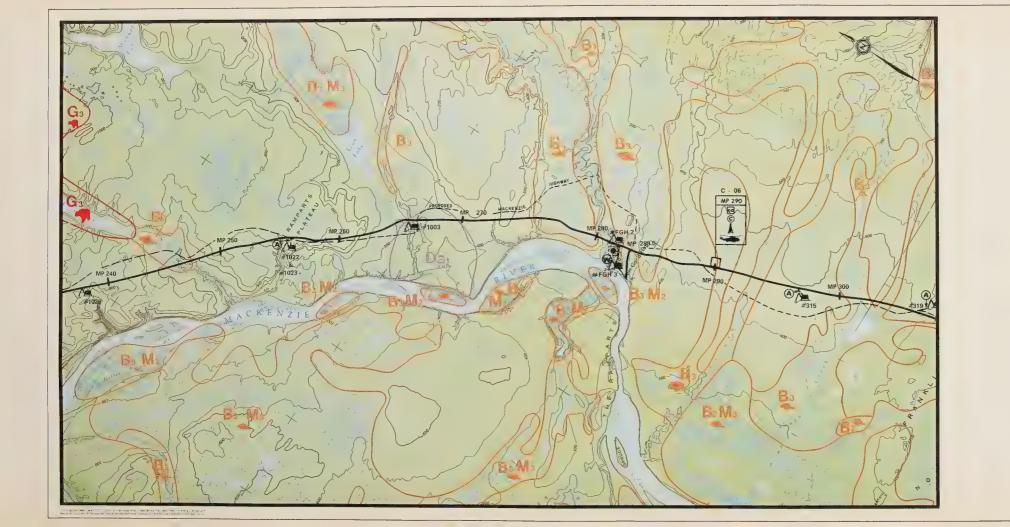
			_
PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	©
COMPRESSOR STATION	(C)	PROPOSED HELIPAD	"mile
COMPRESSOR STATION WITH CHILLING	100	PERMANENT ACCESS ROAD	A-
METER STATION	(A)	TEMPORARY ACCESS ROAD	A
MATERIAL STOCKPILE SITE	(e)	PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	
PROPOSED TEMPORARY WHARF	Δ	BORROW AREA	<b>/</b> ▲
CNT REPEATER STATION	À		

NOTE THE LOCATION OF TEMPORARY CONSTRUCTION FACILITIES AND PEPMANLING INSTALLATIONS IS NOT FINAL AND IS SUBJECT TO CHANGE UPON COMPLETION OF DETAILS, DIT INNESTIGATION AND IS STORY.

ENVIRONMENTAL MAP

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### ENVIRONMENTAL LEGEND

#### HABITAT UNIT BOUNDARIES

#### HABITAT CLASS RATINGS



CLASS 1 BEST AVAILABLE HABITAT CLASS 2 INTERMEDIATE QUALITY HABITAT CLASS 3 POOR QUALITY HABITAT NOT RATED HABITAT OF MARGINAL OR

(for Bears and Wolves)

INSIGNIFICANT QUALITY

# DESCRIPTOR

Example 83M3 indicates habitational comprising of poor beaver habitaticiase 31 and poor muskrat habitaticiase 3

# PIPELINE LEGEND

PROPOSED PIPELINE ROUTE
PROPUSED PIPELINE ROOTE
COMPRESSOR STATION
COMPRESSOR STATION WITH CHILLING
METER STATION
MATERIAL STOCKPILE SITE
PROPOSED PERMANENT WHARF
PROPOSED TEMPORARY WHARF
CNT REPEATER STATION

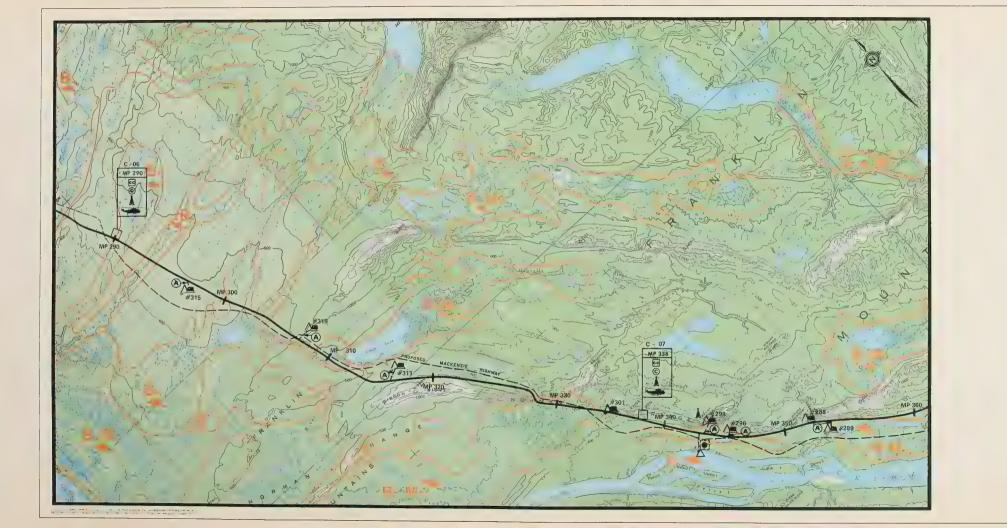
CONSTRUCTION CAMP (TEMPORARY) PROPOSED HELIPAD PERMANENT ACCESS ROAD TEMPORARY ACCESS ROAD ---(A)--------PROPOSED HIGHWAY EXISTING HIGHWAY BORROW AREA

NOTE THE LOCATION OF TEMPORARY CONSTRUCTION FAC CITIES AND REMANANT INSTALLATIONS IS A FEMAL AND IS SUBJECT TO CHANGE UPON COMPLETION OF DETAILES, SITE INVESTIGATION AND CCG ST COSTITUTES.

ENVIRONMENTAL MAP

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# ENVIRONMENTAL LEGEND

# HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS BM —— BEAVER, MUSKRAT CLASS 1 BEST AVAILABLE HABITAT F —— ARCTIC FOX CLASS 2 INTERMEDIATE QUALITY HABITAT G —— GRIZZLY BEAR CLASS 3 POOR QUALITY HABITAT NOT RATED HABITAT OF MARGINAL OR INSIGNIFICANT QUALITY Descriptor

# PIPELINE LEGEND

Example: B3M3 indicates habitst unit comprising of poor beaver

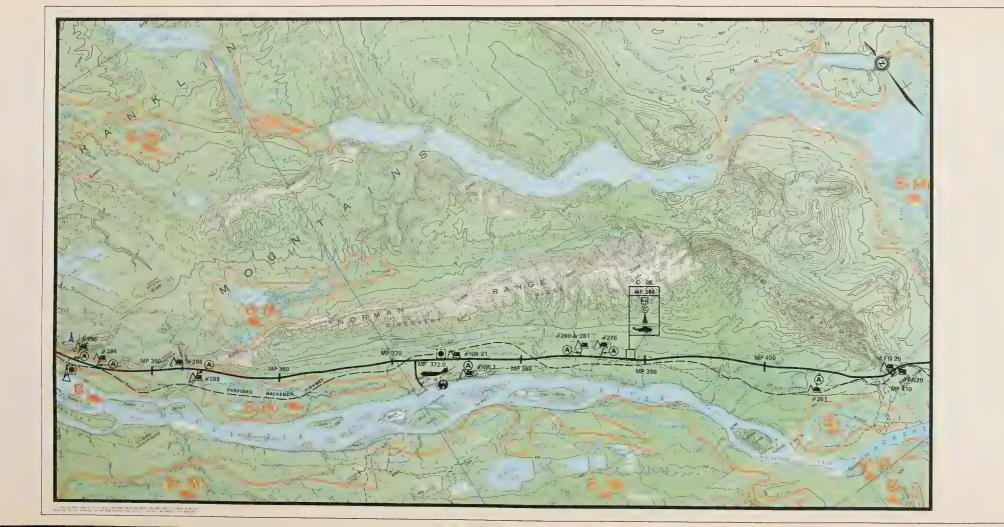
			_
PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	©
COMPRESSOR STATION	C	PROPOSED HELIPAD	-
COMPRESSOR STATION WITH CHILLING	ied	PERMANENT ACCESS ROAD	—A—
METER STATION	IM	TEMPORARY ACCESS ROAD	A
MATERIAL STOCKPILE SITE	•	PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(VV)	EXISTING HIGHWAY	
PROPOSED TEMPORARY WHARF	4,3	BORROW AREA	<u></u>
CNT REPEATER STATION	Å		

NOTE THE LOCAT IN DETERMORARY CONSTRUCTS NEAR CLIMATE STRUCTS NAME AS ASSAULTED AS AN ACCOUNT OF THE PROCESS OF A SECTION OF THE SECTION OF T

ENVIRONMENTAL MAP

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# ENVIRONMENTAL LEGEND

# HABITAT UNIT BOUNDARIES BM BEAVER, MUSKRAT CLASS 1 BEST AVAILABLE HABITAT F ARCTIC FOX CLASS 2 INTERMEDIATE QUALITY HABITAT G GRIZZLY BEAR CLASS 3 POOR QUALITY HABITAT NOT RATED HABITAT OF MARGINAL OR NOWN DENNING AREAS (for Bears and Wolves)

### DESCRIPTOR

Exemple B<sub>3</sub>M<sub>3</sub> indicates habitat unit comprising of poor bases habitat (class 3) and goor most at habitat (class 3)

# PIPELINE LEGEND

PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	©
COMPRESSOR STATION	(C)	PROPOSED HELIPAD	4
COMPRESSOR STATION WITH CHILLING	EG	PERMANENT ACCESS ROAD	(A)
METER STATION	M	TEMPORARY ACCESS ROAD	A
MATERIAL STOCKPILE SITE		PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	
PROPOSED TEMPORARY WHARF	Δ	BORROW AREA	<u> </u>
CNT REPEATER STATION	å		

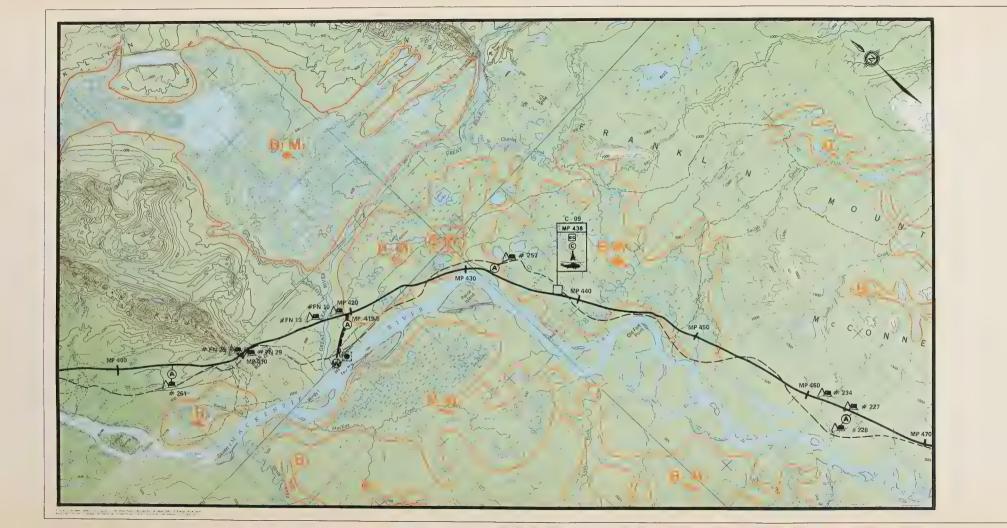
NOTE THE COCATION OF TEMPORANA CONTROL I WEARL THE AND EXHIBITING A TAKE OF THE VACANCES.

SCRUTCT TO CHANGE IN NUCLAMERS IN A FEBRUARY DATE NOTES AND IN AN INC. ST. 5 SEC. C.S.

ENVIRONMENTAL MAP

PREPARED FOR

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# ENVIRONMENTAL LEGEND

# HABITAT UNIT BOUNDARIES BM BEAVER, MUSKRAT CLASS 1 BEST AVAILABLE HABITAT CLASS 2 INTERMEDIATE QUALITY HABITAT G GRIZZLY BEAR CLASS 3 POOR QUALITY HABITAT W BELUGA WHALE NOT RATED HABITAT OF MARGINAL OR INSIGNIFICANT QUALITY (for Bears and Wolves)

# DESCRIPTOR

Example 83M3 indicates habitational comprising of pool bearer habitat (class 3) and poor most ratinately (class 3)

# PIPELINE LEGEND

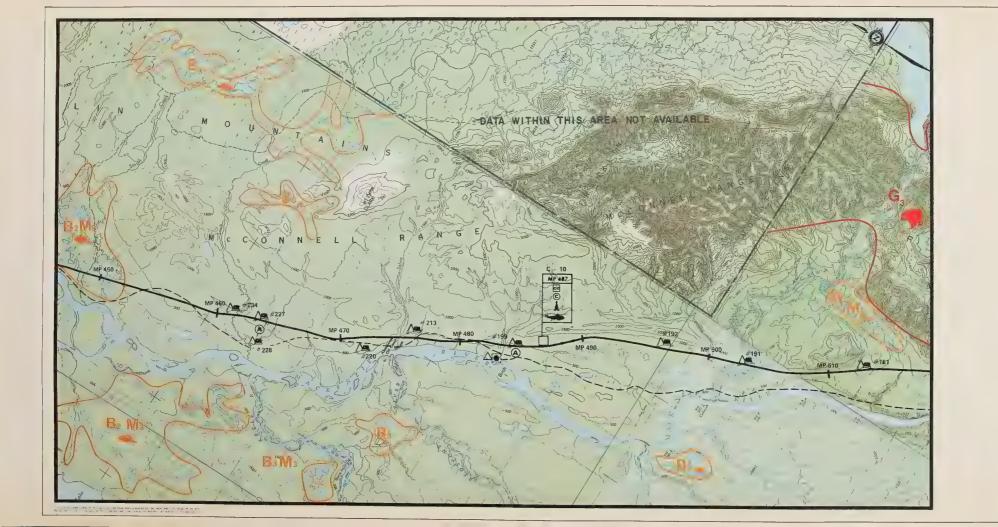
PROPOSED PIPELINE ROUTE COMPRESSOR STATION COMPRESSOR STATION WITH CHILLING	0	CONSTRUCTION CAMP(TEMPORARY) PROPOSED HELIPAD PERMANENT ACCESS ROAD	© ————————————————————————————————————
METER STATION MATERIAL STOCKPILE SITE PROPOSED PERMANENT WHARF PROPOSED TEMPORARY WHARF CNT REPEATER STATION		TEMPORARY ACCESS ROAD PROPOSED HIGHWAY EXISTING HIGHWAY BORROW AREA	<u></u>

NOTE THE LOCATION OF TEMPORARY CONSTRUCTION FACILITIES AND FERMANENT INSTALLATIONS. S. NOT /. NA. AND IS SUBJECT TO CHARGE UPON COMPLETION OF DETAILED SITE INVESTIGATION AND LOGISTICS STUDIES.

ENVIRONMENTAL MAP

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# ENVIRONMENTAL LEGEND

HABITAT UNIT BOUNDARIES

BM BEAVER, MUSKRAT

G ARCTIC FOX

G GRIZZLY BEAR

W BELUGA WHALE

DD KNOWN DENNING AREAS

(for Bears and Wolves)

DESCRIPTOR

HABITAT CLASS 1 BEST AVAILABLE HABITAT

CLASS 2 INTERMEDIATE QUALITY HABITAT

CLASS 3 POOR QUALITY HABITAT

NOT RATED HABITAT OF MARKINAL OR

INSIGNIFICANT QUALITY

DESCRIPTOR

# PIPELINE LEGEND

Example B<sub>3</sub>M<sub>3</sub> indicates habitat unit comprising of poor beaser habites (class 3) and poor musk-at hebites (class 3)

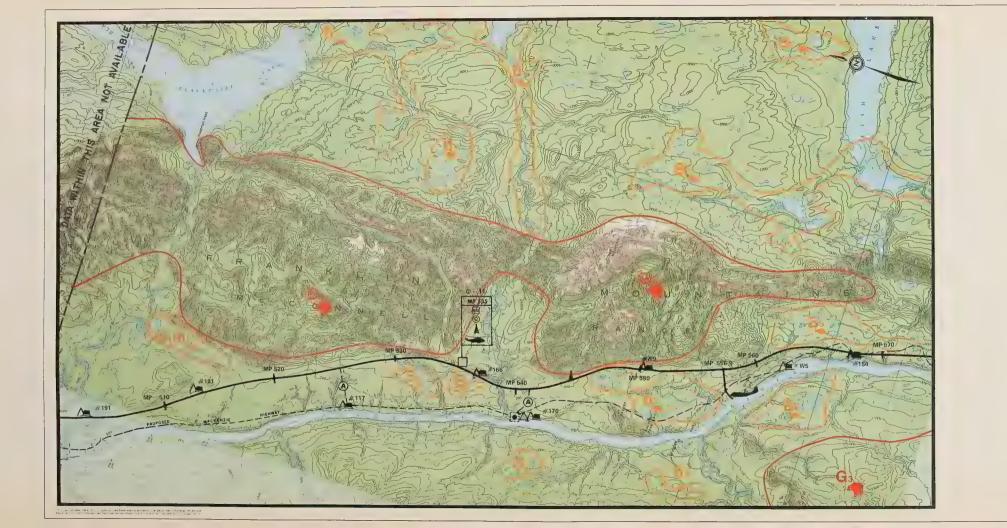
PROPOSED PIPELINE ROUTE CONSTRUCTION CAMP [TEMPORARY] COMPRESSOR STATION PROPOSED HELIPAD PERMANENT ACCESS ROAD COMPRESSOR STATION WITH CHILLING TEMPORARY ACCESS ROAD METER STATION PROPOSED HIGHWAY -----MATERIAL STOCKPILE SITE EXISTING HIGHWAY PROPOSED PERMANENT WHARF PROPOSED TEMPORARY WHARF BORROW AREA CNT REPEATER STATION

NOTE THE LOCATION OF TEMPORARY CONSTRUCTION FACILITIES AND PLAMANENE INSTALLATIONS IS NOT FINAL AND IS SUBJECT TO CHANGE UPON COMPLETION OF DEFAULT. SITE INVEST: LATION AND COISTICS STUDIES

ENVIRONMENTAL MAP

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### ENVIRONMENTAL LEGEND

#### HABITAT UNIT BOUNDARIES

# HABITAT CLASS BATINGS CLASS 1 BEST AVAILABLE HABITAT

CLASS 2 INTERMEDIATE QUALITY HABITAT



BEAVER, MUSKRAT

(for Bears and Wolves)

CLASS 3 POOR QUALITY HABITAT NOT RATED HABITAT OF MARGINAL OR Da - KNOWN DENNING AREAS

INSIGNIFICANT QUALITY

Example Bylly indicates habitationic comprising of poor basiver habitatic lass 31 and poor modical habitatic lass 3

# PIPELINE LEGEND

ROPOSED PIPELINE ROUTE
OMPRESSOR STATION
OMPRESSOR STATION WITH CHILLING
METER STATION
MATERIAL STOCKPILE SITE
ROPOSED PERMANENT WHARF
ROPOSED TEMPORARY WHARF
NT REPEATER STATION

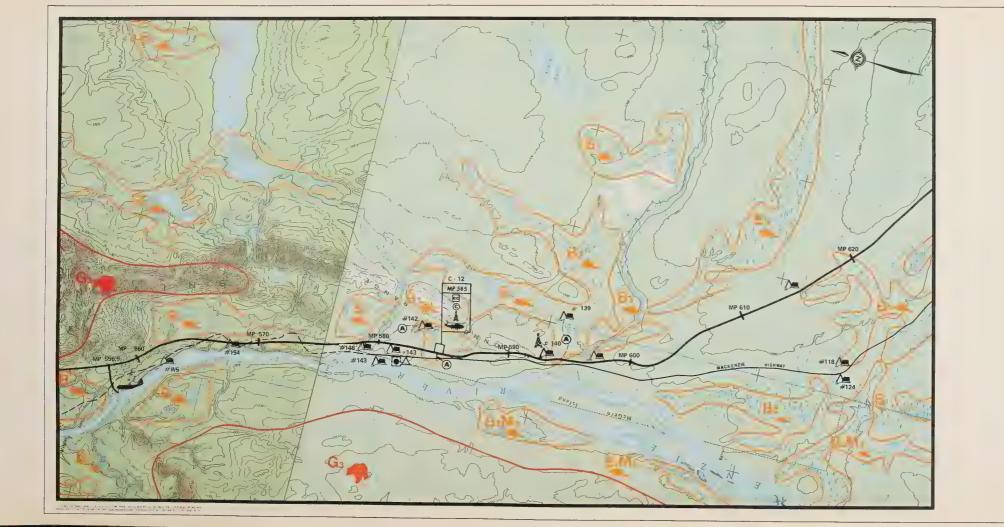


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ENVIRONMENTAL MAP

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# ENVIRONMENTAL LEGEND

# DESCRIPTOR

Example  $B_3M_2$  indicates habitat unit comprising of poor beaver habitat (class 3) and poor mush at habitat (class 3)

# PIPELINE LEGEND

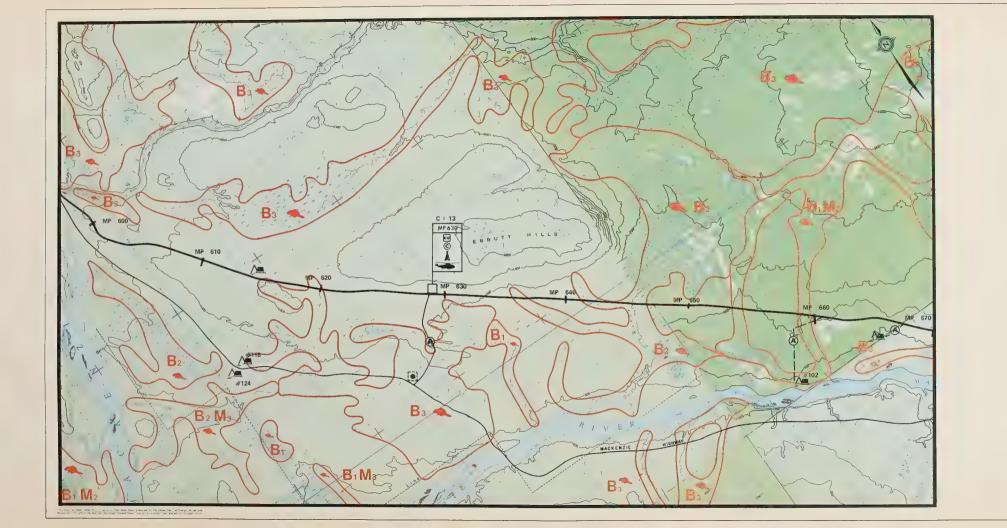
PROPOSED PIPELINE ROUTE CONSTRUCTION CAMP (TEMPORARY) COMPRESSOR STATION PROPOSED HELIPAD PERMANENT ACCESS ROAD —(A)---COMPRESSOR STATION WITH CHILLING TEMPORARY ACCESS ROAD ---(A)---METER STATION MATERIAL STOCKPILE SITE PROPOSED HIGHWAY -----EXISTING HIGHWAY PROPOSED PERMANENT WHARF BORROW AREA PROPOSED TEMPORARY WHARF CNT REPEATER STATION

NOTE THE COLDING HETTAP RAIN CONTROL OF ALL FROM COLUMN AND THE AT AS SMITH AS SMITH SOME TERMS FOR COMMENTAL FOR THE COLUMN SOME TERMS FOR COLUMN AND A COLUMN AS A COLUMN AS

ENVIRONMENTAL MAP

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#### ENVIRONMENTAL LEGEND

# HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS

BEAVER, MUSKRAT

F ARCTIC FOX

G G GRIZZLY BEAR

W BELUGA WHALE

D. KNOWN DENNING AREAS

CLASS 1 BEST AVAILABLE HABITAT

CLASS 2 INTERMEDIATE QUALITY HABITAT

CLASS 3 POOR QUALITY HABITAT

NOT RATED HABITAT OF MARGINAL OR

INSIGNIFICANT QUALITY

(for Bears and Wolves)

DESCRIPTOR

Example BgMg indicates habitat unit compile og of poor basser habitat (class 3) and poor muskrat habitat (class 3)

### PIPELINE LEGEND

PROPOSED PIPELINE ROUTE
COMMRESSOR STATION
COMPRESSOR STATION WITH CHILLING
METER STATION
MATERIAL STOCKPILE SITE
PROPOSED PERMANENT WHARF
PROPOSED TEMPORARY WHARF
CNT REPEATER STATION

CONSTRUCTION CAMP (TEMPORARY) (C)
PROPOSE D HELIPAD
PERMANENT ACCESS ROAD
TEMPORARY ACCESS ROAD
PROPOSED HIGHWAY
(A)
BORROW AREA

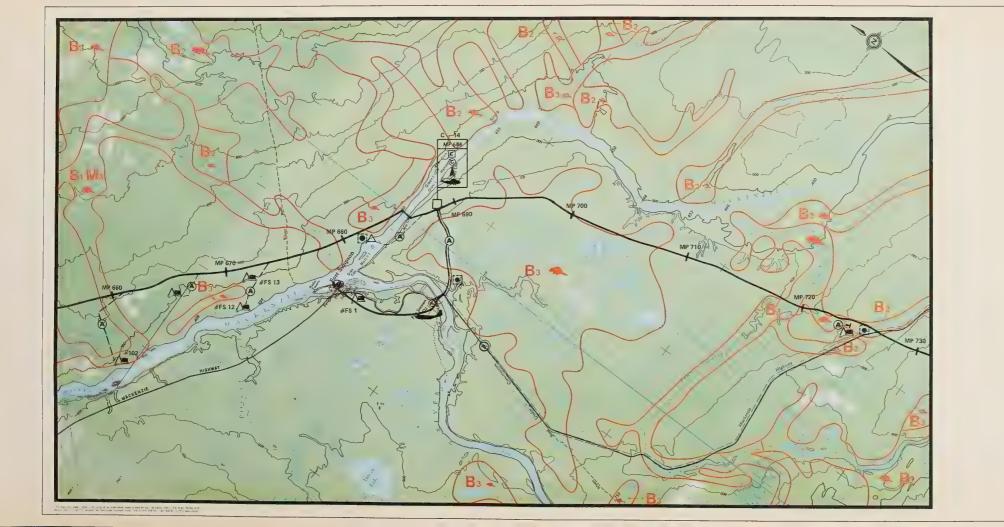
BORROW AREA

NOTE THE LOCATION OF TEMPORARY CONSTRUCTION EXCILITIES AND PERMANENT INSTAIL IT INS. SN. SE NA. AN. S. SUBJECT TO CHANGE UPON COMPLETION OF DETAILED SITE INVESTIGATION AND CO. ST. SST. ES.

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# ENVIRONMENTAL LEGEND

# HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS BM BEAVER, MUSKRAT CLASS 1 BEST AVAILABLE HABITAT F ARCTIC FOX CLASS 2 INTERMEDIATE QUALITY HABITAT G GRIZZIV BEAR CLASS 3 POOR QUALITY HABITAT W BELUGA WHALE NOT RATED HABITAT OF MARGINAL OR INSIGNIFICANT QUALITY (for Bears and Wolves)

# PIPELINE LEGEND

DESCRIPTOR

Example 8<sub>3</sub>M<sub>3</sub> indicates habitat unit comprising of poor beaver habitat (class 3) and poor musicat habitat (class 3).

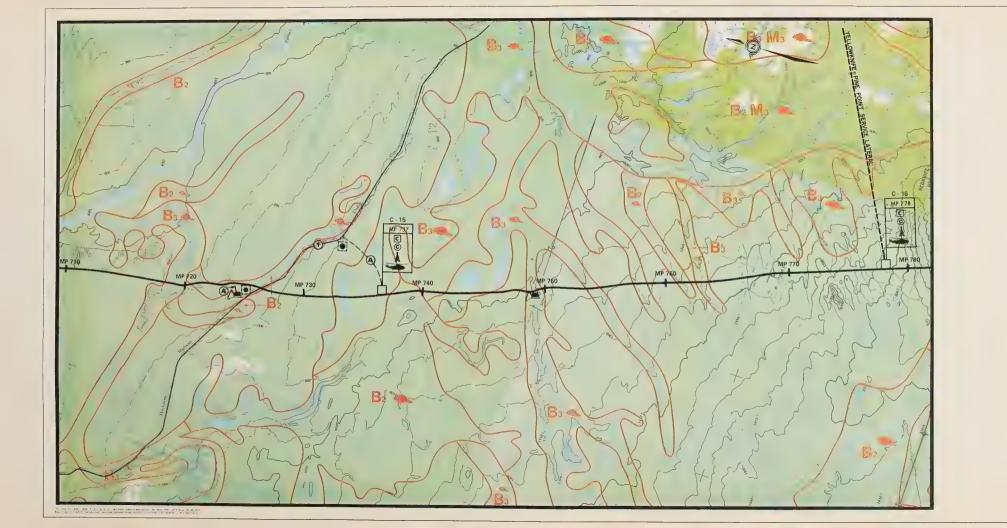
PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	©
COMPRESSOR STATION	C	PROPOSED HELIPAD	
COMPRESSOR STATION WITH CHILLING	500	PERMANENT ACCESS ROAD	—(A)—
METER STATION	(64)	TEMPORARY ACCESS ROAD	(A)
MATERIAL STOCKPILE SITE		PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	
PROPOSED TEMPORARY WHARF	Δ	BORROW AREA	<u>/=</u>
CHT REPEATER STATION	ė		

NOTE THE LOCATION OF TEMPORARY CONTINUE FOR FACILITIES AND PERMANENT INSTALCATIONS IS NOT FINAL AND IS SUBJECT TO CHANGE UPON COMPLETION OF DETAILED SITE INVIDES IN A 12-74 AND 11 ASTROS STUDIES.

ENVIRONMENTAL MAP

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### ENVIRONMENTAL LEGEND

# HABITAT UNIT BOUNDARIES HABITAT CLASS RATINGS BM —— BEAVER, MUSKRAT CLASS 1 BEST AVAILABLE HABITAT F —— ARCTIC FOX CLASS 2 INTERMEDIATE QUALITY HABITAT G —— GRIZZLY BEAR CLASS 3 POOR QUALITY HABITAT W —— BELUGA WHALE NOT RATED HABITAT OF MARGINAL OR KNOWN DENNING AREAS (107 Bars and Wolves)

DESCRIPTOR

Example 9<sub>3</sub>M<sub>3</sub> indicates habitet unit comprising of poor beaver habitet Iclass 3) and poor musk set habitet Iclass 31

# PIPELINE LEGEND

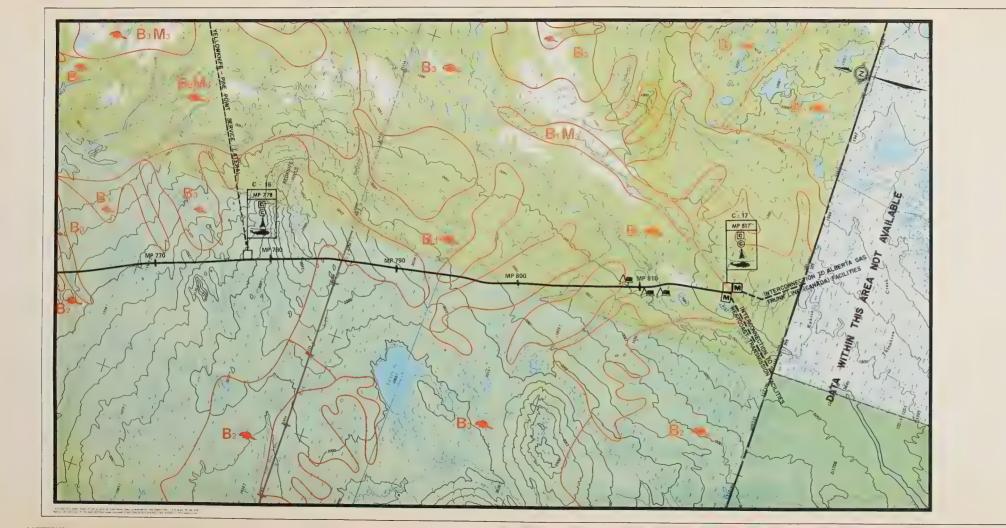
PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	©
COMPRESSOR STATION	C	PROPOSED HELIPAD	1486
COMPRESSOR STATION WITH CHILLING	DG	PERMANENT ACCESS ROAD	——A—
METER STATION	M	TEMPORARY ACCESS ROAD	A
MATERIAL STOCKPILE SITE	(4)	PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(W)	EXISTING HIGHWAY	
PROPOSED TEMPORARY WHARF	Δ	BORROW AREA	∆ <del>=</del>
CNT REPEATER STATION	Å		

NOTE THE COCATION OF TEMPORARY CONSTRUCTION FACILITIES AND FERMANENT INSTALLATIONS IS NOT FINAL AND IS SUBJECT TO CHANGE UPON COMPLETION OF DETAILED SITE INVESTIGATION AND LOGISTICS STUDIES.

ENVIRONMENTAL MAP

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### ENVIRONMENTAL LEGEND

# HABITAT UNIT BOUNDARIES BEAVER, MUSKRAT CLASS 1 BEST AVAILABLE HABITAT CLASS 2 INTERMEDIATE QUALITY HABITAT G GRIZZLY BEAR CLASS 3 POOR QUALITY HABITAT W BELUGA WHALE NOT RATED HABITAT OF MARGINAL OR INSIGNIFICANT QUALITY (for Bears and Wolves)

#### DESCRIPTOR

Example B<sub>3</sub>M<sub>3</sub> indicates habitat unit comprising of poor bearer habitat iclass 3) and poor muthrat habitat iclass 3)

# PIPELINE LEGEND

PROPOSED PIPELINE ROUTE	_	CONSTRUCTION CAMP (TEMPORARY)	©
COMPRESSOR STATION	C	PROPOSED HELIPAD	-
COMPRESSOR STATION WITH CHILLING	<b>E</b>	PERMANENT ACCESS ROAD	—(A)—
METER STATION	M	TEMPORARY ACCESS ROAD	A
MATERIAL STOCKPILE SITE		PROPOSED HIGHWAY	
PROPOSED PERMANENT WHARF	(89)	EXISTING HIGHWAY	
PROPOSED TEMPORARY WHARF	2	BORROW AREA	/ve
CNT REPEATER STATION	Ā		

- NOTE. THE COCKET N. IF TEMPORARY CONSTRUCT. IN TAC SET ES AN IPPERMANENT INSTITUTE AS CACEL NAV. AND S. SURJECT TO CHAIN IF UPON COMPLETION OF OTHER COSTITUTIVES. LAT. IN AND COURSE S.S. O. (S.

ENVIRONMENTAL MAP

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# LAND USE AND SPECIAL AREAS

# BACKGROUND

The following maps depict important areas and sites which do not appear in other series of the Environmental Maps. The items shown include human use sites and areas, known archaeological sites, and present or proposed areas of biological significance.

Human use sites and areas include: campgrounds, roadside parks, picnic sites, sport fishing camps, outfitter base camps, town development areas, and proposed development control zones. These locations were obtained from the Land Use Information Series (Environment Canada, 1972).

The archaeological sites depicted on the maps were located from mapped locations and site descriptions found in Cinq-Mars (1973, 1974) and Millar (1973).

There is some evidence to suggest that the mapped locations do not correspond exactly with the described locations. In addition, vague descriptions often made the pinpointing of site locations a difficult task. The site locations yield no information regarding their significance. Since reporting procedures of various investigators differ considerably, an evaluation of site significance from published reports could not be done. Thus, all occurrences, which could include stray finds of worked flakes and historical artifacts such as shell casings and tin cans, have been indicated.

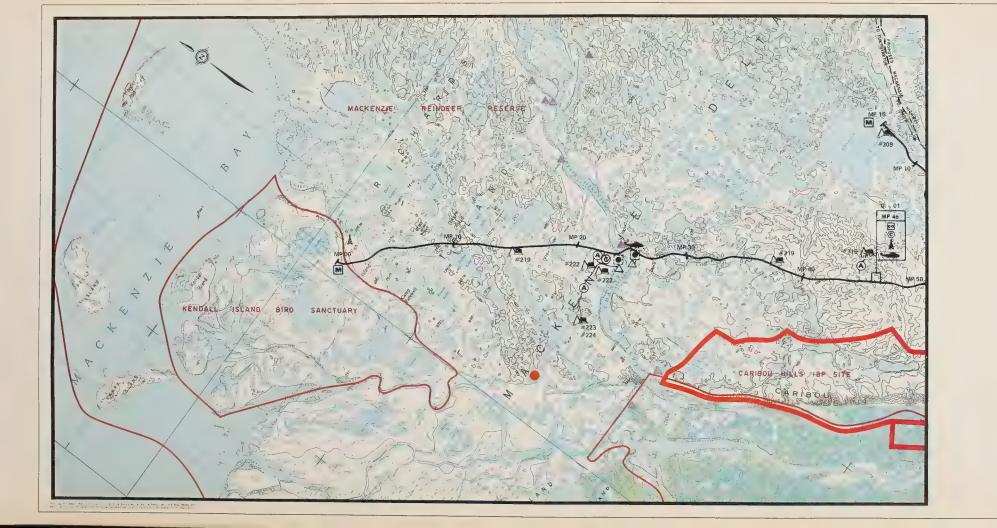
Areas of biological significance demarked on the maps include game preserves, reserves and sanctuaries, proposed International Biological Program (I.B.P.) sites, and proposed forest reserves. The locations of these areas were obtained from Environment Canada (1972); Forest Management Institute (1974), and Elf Oil (1974). The proposed I.B.P. sites and forest reserves are briefly described in Part 5, Section 3.6.5. of this application.

# INFORMATION SOURCES

- Cinq-Mars, J. 1973. Preliminary archaeological study, Mackenzie Corridor. Environmental-Social Committee, Northern Pipelines. Ottawa.
- 1974. Preliminary archaeological study, Mackenzie Corridor (Second Report). Environmental-Social Committee, Northern Pipelines, Ottawa.
- Elf Oil Canada Ltd. 1974. Map outlining proposed ecological sites (1.B.P.) in the Yukon and Northwest Territories. CCIBP/CT Region 10, Lethbridge, Alberta
- Environment Canada. 1972. Land use information (maps) series. Maps produced by

  Land Use Planning Branch of the Lands Directorate; Lands, Forests and

  Wildlife Service of the Department of the Environment. Ottawa.
- Forest Management Institute. 1974. Vegetation types of the Mackenzie Corridor. Environmental-Social Program, Northern Pipelines. Report No. 73 · 46.
- Millar, J.F.V. 1973. Report on 1973 program, archaeological impact study, Mackenzie
  Highway system. Manuscript on file, Canada Department of Public Works.
  Edmonton.



# LAND USE AND SPECIAL AREAS

# LEGEND

GAME PRESERVES RESERVES AND SANCTUARIES
PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM (1.8 P.) SITES
SPORT FISHING CAMPS AND OUTFITTER BASE CAMPS
PROPOSED FOREST RESERVES
CAMPGROUNDS, ROADSIDE PARKS AND PICNIC SITES
BOUNDARY OF PROPOSED OEVELOPMENT CONTROL ZONES
LIMIT OF A DEVELOPMENT AREAS
EXCAVATED ARCHAELOGICAL SITES
ARCHAELOGICAL SITES
ARCHAELOGICAL SITES

# PIPELINE LEGEND

PROPOSED PIPELINE ROUTE CONSTRUCTION CAMP (TEMPORARY) PROPOSED HELIPAD COMPRESSOR STATION PERMANENT ACCESS ROAD COMPRESSOR STATION WITH CHILLING TEMPORARY ACCESS ROAD METER STATION PROPOSED HIGHWAY -----MATERIAL STOCKPILE SITE PROPOSED PERMANENT WHARF EXISTING HIGHWAY BORROW AREA PROPOSED TEMPORARY WHARF CAT REPEATER STATION

MOTE THE CO. AT MOST TEMPORARY CONSTRUCT. NEAR COTES AND PERMANENT NEED. AT NO. S. S. CENTAL OF CO. S. S. SERVEST. AT N. ASC. S. C. CETE. L.C.

ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.

# RESERVE MIDDLE MACKENZIE DELTA It form over a proceduration on a proceduration of the procedural forms of the

# LAND USE AND SPECIAL AREAS

# LEGEND

GAME PRESERVES RESERVES AND SANCTUARIES
PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM (18 P 1 SITES
SPORT FISHING CAMPS AND OUTFITTER BASE CAMPS
PROPOSED FOREST RESERVES
CAMPGROUNDS, ROADSIDE PARKS AND PICNIC SITES
BOUNDARY OF PROPOSED DEVELOPMENT CONTROL ZONES
LIMIT OF A DEVELOPMENT AREAS
EXCAVATED ARCHAELOGICAL SITES
ARCHAEOLOGICAL SITES AND OCCURRENCES

# PIPELINE LEGEND

MUTE THE COLUMN TEMPORARY WERE CENTER OF A REPRESENTANTACION OF A FEW AND A STRUCTURE OF A STRUC

# ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.

# REMPER MACKENZIE

# LAND USE AND SPECIAL AREAS

#### LEGEND

CAME PRESERVES RESERVES AND SANCTUARIES
PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM (1 B.P.1 SIYES
SPORT FISHING CAMPS AND OUTFITTER BASE CAMPS
PROPOSED FOREST RESERVES
CAMPGROUNDS, ROADSIDE PARKS AND PICNIC SITES
BOUNDARY OF PROPOSED DEVELOPMENT CONTROL ZONES
LIMIT OF A DEVELOPMENT AREAS
EXCAVATED ARCHAELOGICAL SITES
ARCHAEOLOGICAL SITES AND OCCURRENCES

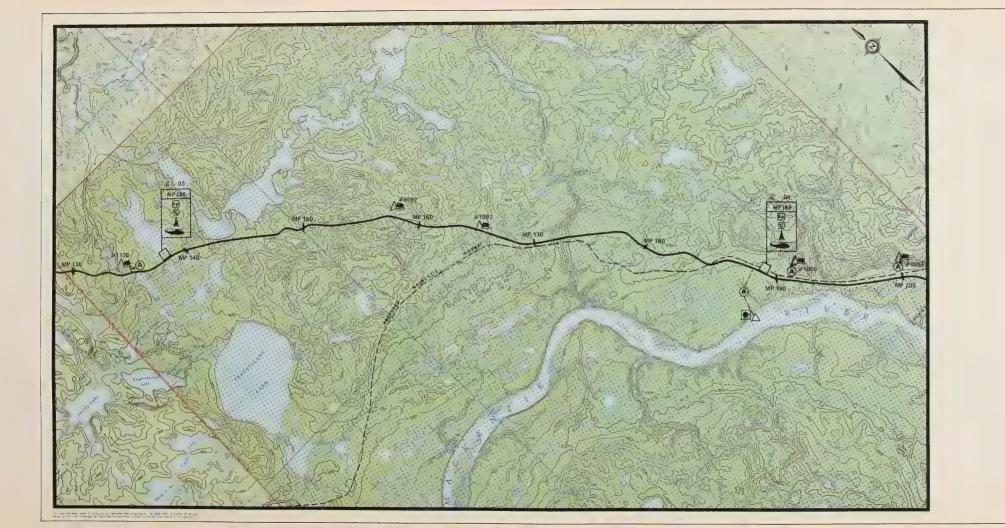
# PIPELINE LEGEND

PROPOSED PIPELINE ROUTE CONSTRUCTION CAMP (TEMPORARY) PROPOSED HELIPAD COMPRESSOR STATION PERMANENT ACCESS ROAD COMPRESSOR STATION WITH CHILLING TEMPORARY ACCESS ROAD ---(Ā)----METER STATION MATERIAL STOCKPILE SITE PROPOSED HIGHWAY -----EXISTING HIGHWAY PROPOSED PERMANENT WHARF BORROW AREA PROPOSED TEMPORARY WHARF CNT REPEATER STATION

NOTE: THE LOCATION OF TEMPORARY CONSTRUCTION FACILITIES AND PERMANENT INSTALLATIONS IS NOT FINAL AND IS SUBJECT TO CHANGE UPDIS COMPLETION OF DETAILED SITE MAY STEED AND IS 35T, 0.15

# ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.



#### LEGEND

CAME PRESERVES. RESERVES AND SANCTUARIES
PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM (1 B P ) SITES
SPORT FISHING CAMPS AND DUTETITER BASE CAMPS
PROPOSED FOREST RESERVES
CAMEGROUNDS, ROADSIDE PARKS AND PICNIC SITES
BOUNDARY OF PROPOSED DEVELOPMENT CONTROL ZONES
LIMIT OF A DEVELOPMENT AREAS
EXCAVATED ARCHAELOGICAL SITES
ARCHAELOGICAL SITES
ARCHAELOGICAL SITES

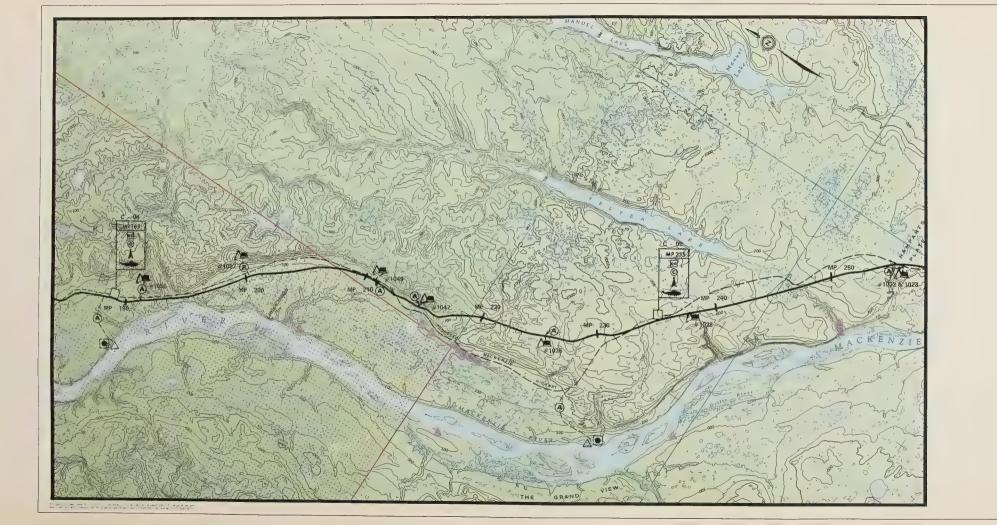
# PIPELINE LEGEND

CONSTRUCTION CAMP (TEMPORARY) PROPOSED PIPELINE ROUTE PROPOSED HELIPAD COMPRESSOR STATION PERMANENT ACCESS ROAD COMPRESSOR STATION WITH CHILLING TEMPORARY ACCESS ROAD METER STATION PROPOSED HIGHWAY -----MATERIAL STOCKPILE SITE EXISTING HIGHWAY PROPOSED PERMANENT WHARF BORROW AREA PROPOSED TEMPORARY WHARF CNT REPEATER STATION

NOTE THE LOCATION OF TEMPORARY CONSTRUCTION FACILITIES AND PERMANENT INSTALLATIONS SINGLETINAL AND SIGNAL AND SINGLET TO CHANGE UPON COMPLETION OF DETAILED SITE INVESTIGATION AND LOGISTICS STUDIES.

# ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.



# LEGEND

GAME PRESERVES RESERVES AND SANCTUARIES
PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM (18 P 1 SITES
SPORT FISHING CAMPS AND OUTFITTER BASE CAMPS
PROPOSED FOREST RESERVES
CAMPGROUNDS ROADSIDE PARKS AND PICNIC SITES
BOUNDARY OF PROPOSED DEVELOPMENT CONTROL ZONES
LIMIT OF A DEVELOPMENT AREAS
EXCAVATED ARCHAELOGICAL SITES
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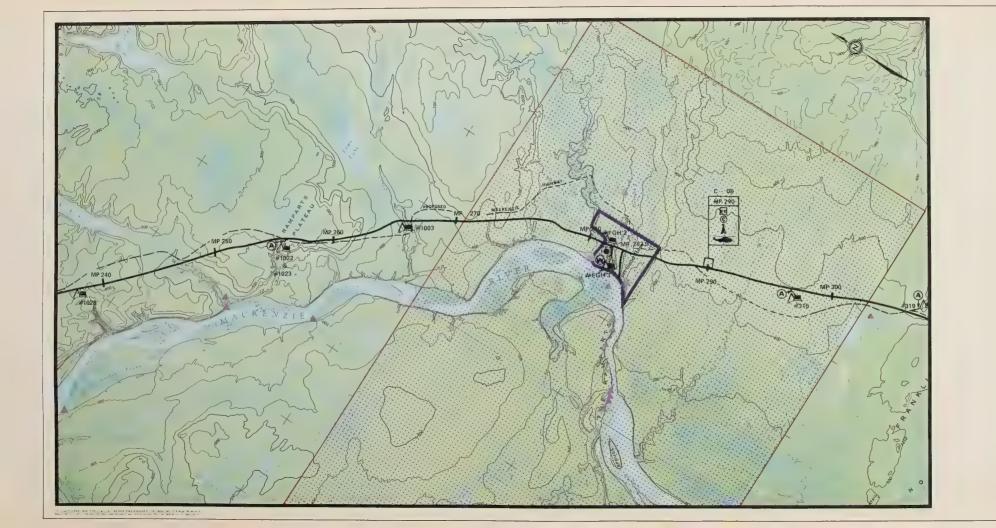
# PIPELINE LEGEND

CONSTRUCTION CAMP (TEMPORARY) (C) PROPOSED PIPELINE ROUTE PROPOSED HELIPAD COMPRESSOR STATION COMPRESSOR STATION WITH CHILLING PERMANENT ACCESS ROAD TEMPORARY ACCESS ROAD ---(A)---METER STATION MATERIAL STOCKPILE SITE PROPOSED HIGHWAY -----PROPOSED PERMANENT WHARF EXISTING HIGHWAY PROPOSED TEMPORARY WHARF ASRA WORROB CNT REPEATER STATION

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ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.



#### LEGEND

CAME PRESERVES RESERVES AND SANCTUARIES
PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM (18 P ) SITES
SPORT FISHING CAMPS AND OUTFITTER BASE CAMPS
PROPOSED FOREST RESERVES

CAMPGROUNDS, ROADSIDE PARKS AND PICNIC SITES
BOUNDARY OF PROPOSED DEVELOPMENT CONTROL ZONES
LIMIT OF A DEVELOPMENT AREAS
EXCAVATED ARCHAELOGICAL SITES
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# PIPELINE LEGEND

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ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.

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# LAND USE AND SPECIAL AREAS

# LEGEND

GAME PRESERVES. RESERVES AND SANCTUARIES
PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM (1.B.P.) SITES
SPORT FISHING CAMPS AND QUIFITER BASE CAMPS
PROPOSED FOREST RESERVES
CAMPGROUNDS, ROADSIDE PARKS AND PICNIC SITES
BOUNDARY OP PROPOSED DEVELOPMENT CONTROL ZONES
LIMIT OF A DEVELOPMENT AREAS
EXCAVATED ARCHAELOGICAL SITES
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# PIPELINE LEGEND

PROPOSED PIPELINE ROUTE

COMPRESSOR STATION

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PROPOSED TEMPORARY WHARF
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PROPOSED TEMPORARY WHARF

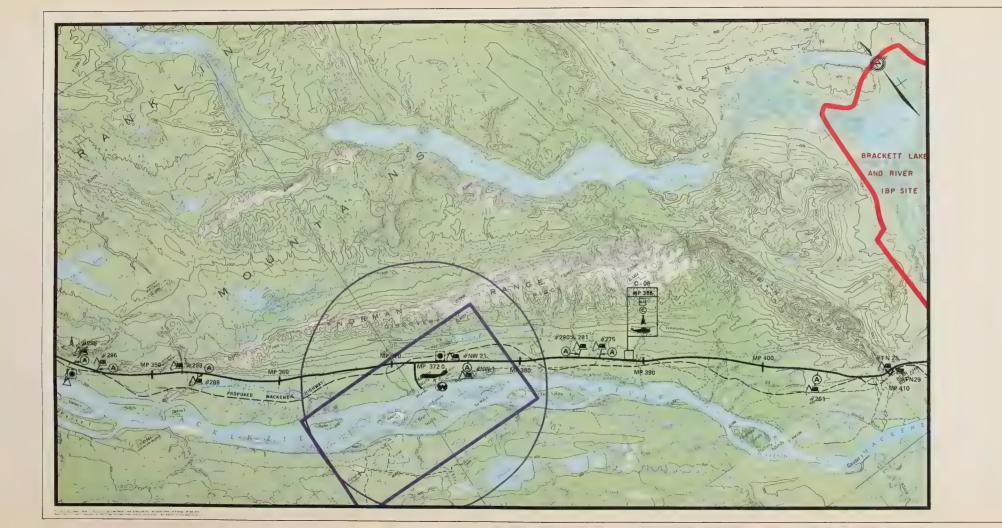
PROPOSED TEMPORARY WHARF

E
ROUTE

NOTE: THE EXCATION OF TEMPORARY CONSIDERCE, WE ACCITOUS AND FERMANENT INSTALL AS LINES CHARGE OPEN COMPLETION OF DETAILED SIZE INVESTIGATION AND INC., STEENS FOR ITS AND ACCITACION.

ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.



# LEGEND

GAME PRESERVES RESERVES AND SANCTUARIES PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM ( I B P ) SITES SPORT FISHING CAMPS AND OUTFITTER BASE CAMPS PROPOSED FOREST RESERVES CAMPGROUNDS, ROADSIDE PARKS AND PICNIC SITES BOUNDARY OF PROPOSED DEVELOPMENT CONTROL ZONES LIMIT OF A DEVELOPMENT AREAS EXCAVATED ARCHAELOGICAL SITES ARCHAEOLOGICAL SITES AND OCCURRENCES

# PIPELINE LEGEND

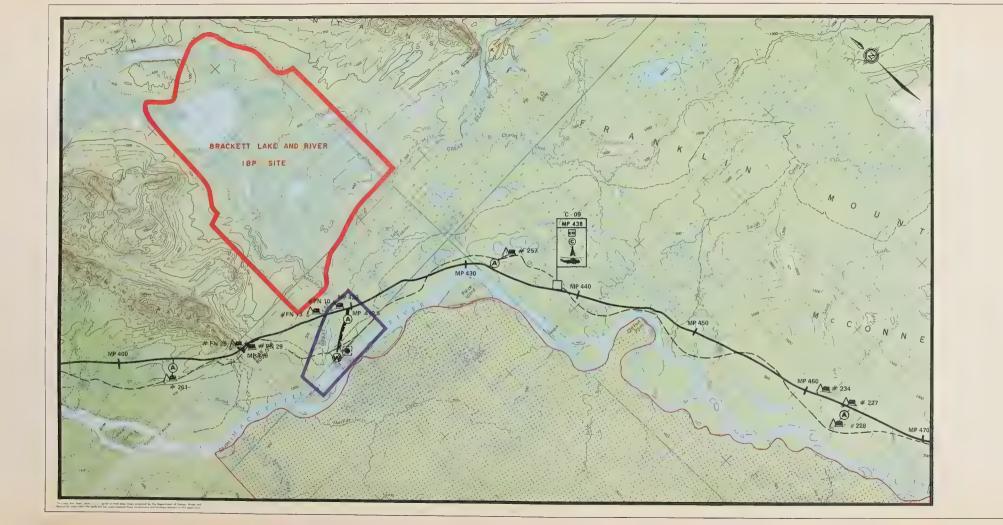
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# ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.



# LEGEND

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# PIPELINE LEGEND

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ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.

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PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM I B.P. I SITES
SPORT FISHING CAMPS AND OUTFITTER BASE CAMPS
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CAMPGROUNDS, ROADSIDE PARKS AND PICNIC SITES
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# PIPELINE LEGEND

PROPOSED PIPELINE ROUTE

COMPRESSOR STATION WITH CHILLING

COMPRESSOR STATION WITH CHILLING

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PERMANENT ACCESS ROAD

AMERIKAL STOCKPILE SITE

PROPOSED PERMANENT WHARF

PROPOSED PERMANENT WHARF

PROPOSED PERMORARY WHARF

BORROW AREA

CYT REPEARER STATION

# ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.



# LEGEND

CAMP PRESERVES RESERVES AND SANCTUARIES
PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM (18 P 1 SITES
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#### PIPELINE LEGEND

PROPOSED PIPELINE ROUTE

COMPRESSOR STATION

COMPRESSOR STATION

WITH CHILLING

PERMANENT ACCESS ROAD

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PROPOSED HIGHWAY

PROPOSED PERMANENT WHARF

PROPOSED PERMANENT WHARF

CNT REPEATER STATION

COMPRESSOR STATION

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NOTE THE LOCATION OF TEMPORARY CONSTRUCTION FA. LITTES AND PERMANENT INSTALLATIONS IS NOT FINAL AND IS SURJECT TO CHANGE UPON COMPLETION OF DITALEDS TE HINEST GAT ON AND LOGISTICS STUDIES.

# ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.



# LEGEND

CAME PRESERVES RESERVES AND SANCTUARIES

PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM I 1 B P. ) SITES

SPORT FISHING CAMPS AND OUTFITTER BASE CAMPS
PROPOSED FOREST RESERVES

CAMPGROUNDS, ROADSIDE PARKS AND PICNIC SITES
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EXCAVATED ARCHAELOGICAL SITES

ARCHAELOGICAL SITES

ARCHAELOGICAL SITES

# PIPELINE LEGEND

PROPOSED PIPELINE ROUTE

COMPRESSOR STATION WITH CHILLING

COMPRESSOR STATION WITH CHILLING

PROPOSED HELIPAD

PROPOSED HELIPAD

PROPOSED HELIPAD

PROPOSED HICHWAY

PROPOSED PERMANENT ACCESS ROAD

--(A)

PROPOSED PERMANENT WHARF

PROPOSED PERMANENT WHARF

PROPOSED TEMPORARY WHARF

PROPOSED TEMPORARY WHARF

ASSTRUCTION BORROW AREA

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# ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.

# LEGEND

GAME PRESERVES RESERVES AND SANCTUARIES
PROPOSED INTERNATIONAL BIOLOCICAL PROGRAM I I B P. 1 SITES
SPORT FISHING CAMPS AND OUTFITTER BASE CAMPS
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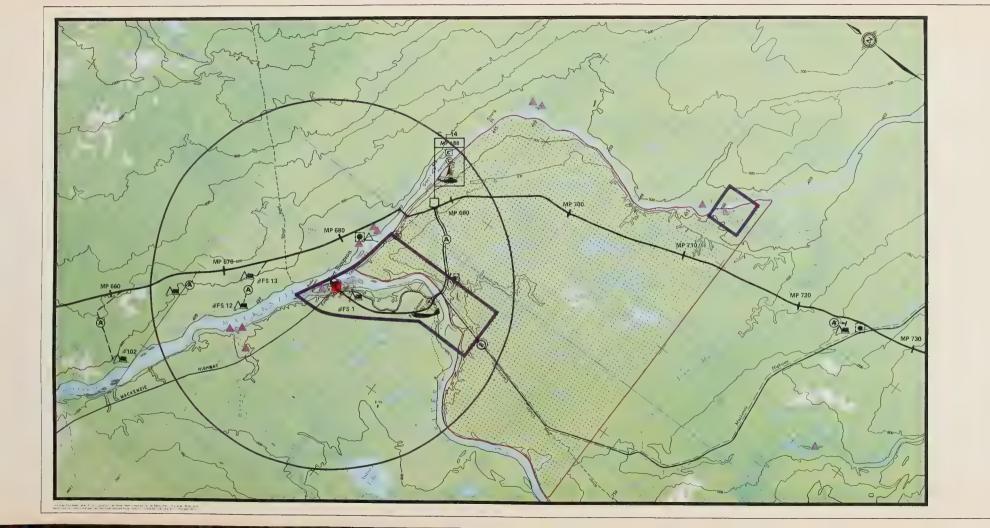
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# FOOTHILLS PIPE LINES LTD.



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#### PIPELINE LEGEND

PROPOSED PIPELINE ROUTE

COMPRESSOR STATION WITH CHILLING

COMPRESSOR STATION WITH CHILLING

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NOTE THE LOCATION OF TEMPORARY CONSTRUCT. NEAC CITES AN PERMANNEL NATIO, ALL MS. SMULL NA AND IS SUBJECT TO CHANGE UPON COMPLETION OF OUT A LED SITE INVESTIGATION AND COUSTS 55 FURIES.

# ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.

# LEGEND

GAME PRESERVES. RESERVES AND SANCTUARIES PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM ( LB.P. ) SITES SPORT FISHING CAMPS AND OUTFITTER BASE CAMPS PROPOSED FOREST RESERVES CAMPGROUNDS, ROADSIDE PARKS AND PICNIC SITES BOUNDARY OF PROPOSED DEVELOPMENT CONTROL ZONES LIMIT OF A DEVELOPMENT AREAS EXCAVATED ARCHAELOGICAL SITES ARCHAEOLOGICAL SITES AND OCCURRENCES

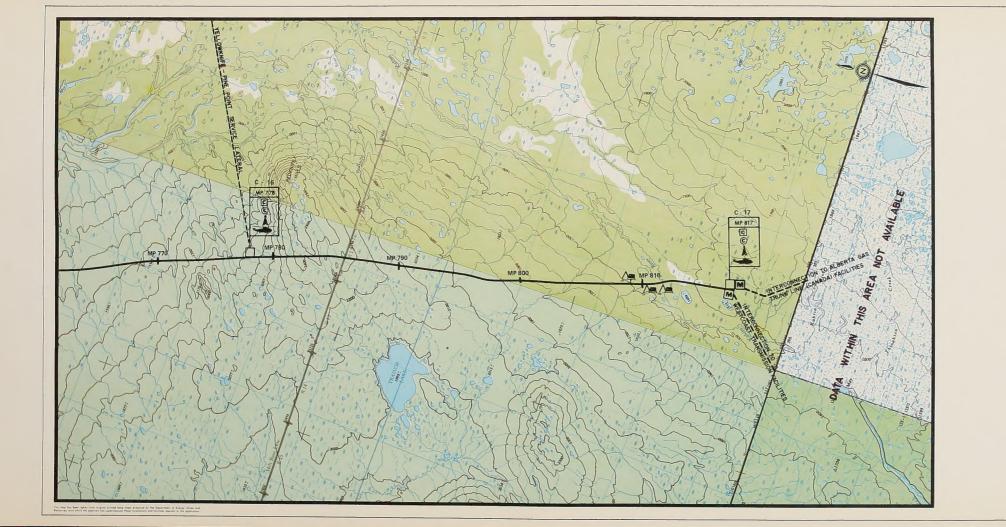
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# ENVIRONMENTAL MAP

# FOOTHILLS PIPE LINES LTD.



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PROPOSED INTERNATIONAL BIOLOGICAL PROGRAM (1.B.P. | SITES
SPORT FISHING CAMPS AND OUTFITTER BASE CAMPS
PROPOSED FOREST RESERVES
CAMPGROUNDS, ROADSIDE PARKS AND PICNIC SITES
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